Northern California's Computer Magazine
Oct. 28, 1991 • 88
FREE

MicroTimes

Dvorak's Computer Talks Back: Page 262

Micro Marketplace
Special Advertising Section For Bay Area Computer Buyers Starts On Page 70

John Tu, David Sun, and a few employees of Kingston Technology

The Kings Of Memory

Specialized Vendors Prosper As Market Grows

By Wayne A. Yacco

David Sun of Kingston Technology on the need for RAM: "The average machine still ships with less than one megabyte. In the next two or three years, memory will at least double if not triple. Just to run Windows, I think you need four megabytes." See page 98

Multimedia For Mac And Windows

"Magic and Action! deliver low-cost, accessible, and effective means for dynamic communications, today." Story starts on page 196

Cross-Platform Software

"Corporations love 1-2-3. The ones who also loved Windows were forced to start purchasing Excel so that users wouldn't have to run boring old character-mode 1-2-3 under Windows." Story starts on page 121

Networking Adventures In System 7

"The networking features built into System 7 are powerful and convenient. They include password protection, multiple access levels, and system administration features." Story starts on page 130

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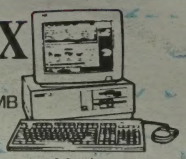

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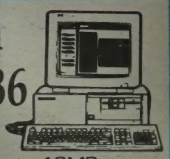

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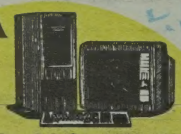

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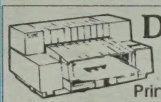

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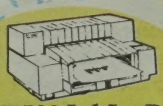

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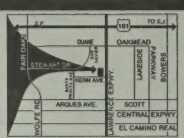

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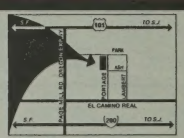

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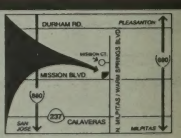

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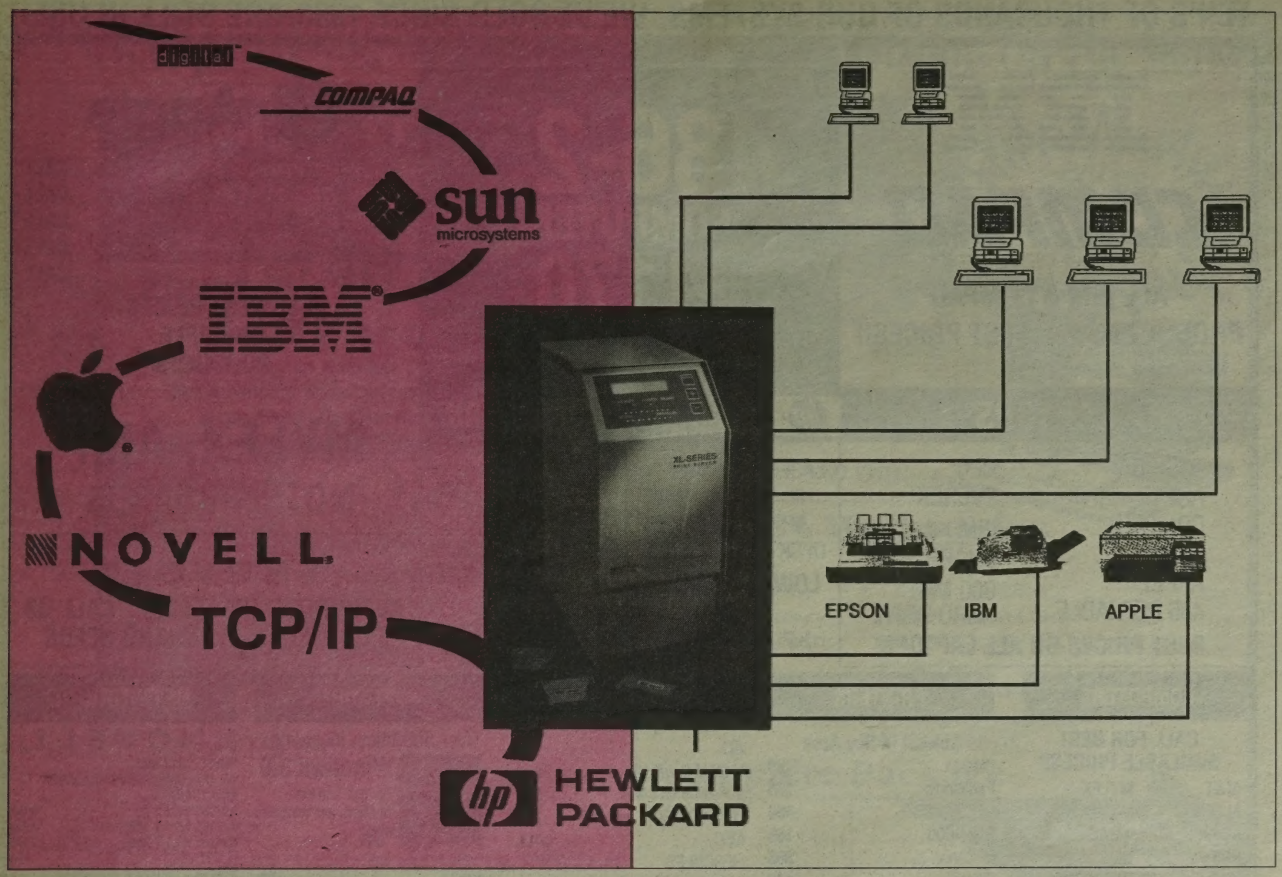

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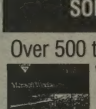

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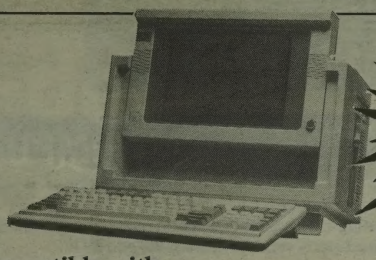

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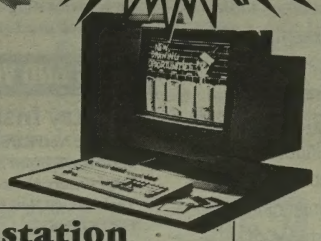

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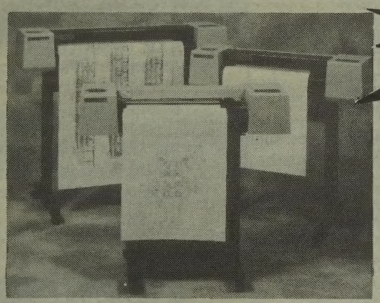

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As hardware becomes more powerful and operating environments like UNIX and Windows become more demanding, the fortunes of those who manufacture memory are soaring. Roving reporter Wayne Yacco visited Irvine-based Kingston Technology to get the inside story on success in the RAM arena. See page 98.

And if you're looking for something to do with that RAM, there's always the Mac's System 7. Contributing editor Lenny Bailes continues his discussion of the new OS, specifically addressing networking issues, beginning on page 130.

—ME

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As new computing environments demand more and more RAM, enterprising third-party vendors find a need and fill it.

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Graphics *By Mike Markowitz* 90
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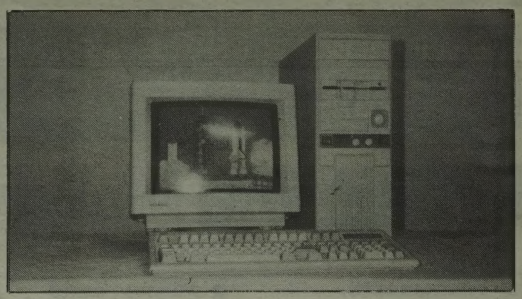

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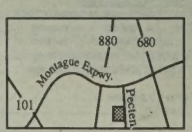

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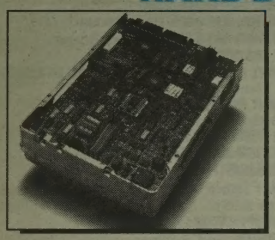
WHOLESALE

HARD DRIVES



170MB 17ms ESDI & SCSI

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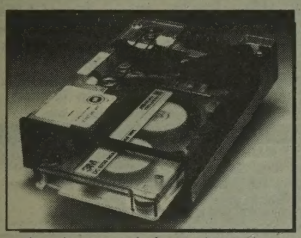
Best buy on a fast drive! These half height Miniscribes offer a snappy 17ms average access time and extremely high reliability. SCSI and ESDI models available. Maxtor factory refurbished in like new condition. **Qty1: $419 Qty5: $389 Qty10: $349**



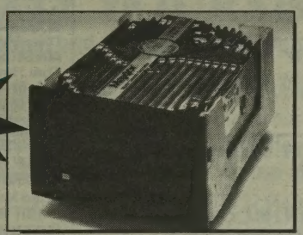
500MB SCSI TAPE

$395 Qty 5

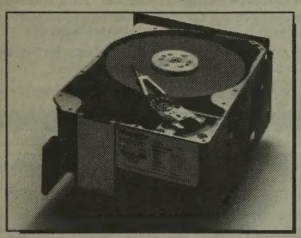
The Archive Viper is the fastest 1/4" tape drive we've found This drive uses DC6250 tapes to store 250MB (Uncompressed) or 500MB with compression. Driver software is available for the FastCache32 and most other SCSI controllers.
Sample Qty 1: $429 Qty 5: $395

320MB 16ms ESDI DRIVE KITS

$695 Qty 5



Repeat of a sellout! CSC just received another shipment of these popular high capacity Maxtor Colorado Drives. The 9380E offers 320MB of formatted capacity and a blazing 16ms average access time. These are ideal drives for network servers and high performance workstations. These drives are Maxtor Colorado factory remanufactured in like new condition. Each drive is preformatted and paired as a complete kit with the brand new DTC 6280-15TX 15bit/sec caching ESDI controller. Kits include all cables and documentation.
Qty1: $749 Qty5: $695 Qty10: $595

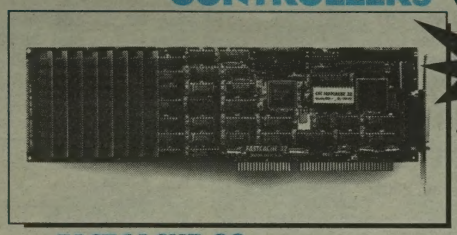


670MB 16.5ms MAXTOR SCSI DRIVES

as low as **$1195** Qty 5

Maxtor pioneered high capacity drives, and the 8760s is one of their most refined designs. Many of our customers call this drive "the tank" because of its reputation for long term reliability. These drives are new, factory fresh with 2 year warranty. A limited quantity of refurbished drives are also available at even lower prices. Call for details. **Qty1: $1295 Qty5: $1195**

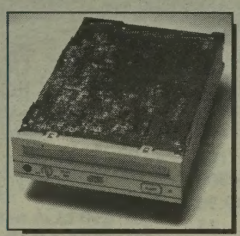
CONTROLLERS



$295 with drive purchase

FASTCACHE 32

The ultimate SCSI controller for 386 and 486 machines! CSC's FastCache32 is a high speed SCSI controller which supports seven SCSI devices including tape drives and CD-ROM's and 4 floppies (including hard and tape drives). On-board cache expands to 32MB using standard SIMMS, providing typical transfer rates in excess of 2000KB/sec and access times of .1ms! New, 5 year warranty.



CD-ROM KIT COMPLETE

$449 Qty 1

Finally, a quality SCSI CD-ROM drive with all of the accessories you do need and none of the cheap discs you don't want. CSC is selling the Chinon CD-ROM drive with MS-DOS driver software, a sample CD-ROM, a CD caddy, and your choice of interface adapters (PC-BUS, or SCSI controller) for $449! These new drives are backed by Chinon's 1yr. factory warranty.

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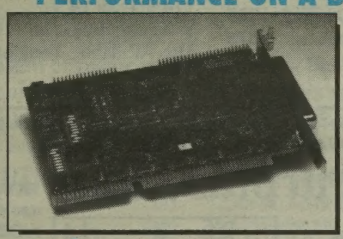

$139 Qty 1

DTC's SCSI and ESDI controllers offer more bang for the buck. The 6280-15TX is our most popular 16 bit ESDI controller which supports transfer rates up to 15MHz and uses a 32K read ahead cache. Our 3280 is the lowest cost true 16-bit SCSI controller on the market. New, 1 year warranty.

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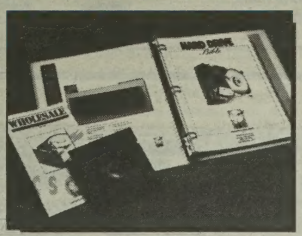
THE GOOD BOOK ON HARD DRIVES



CSC's new edition Hard Drive Bible is the most technical reference on drives available. Included are installation instructions, jumper settings, drive parameter tables, and setup information on hundreds of hard, floppy, tape, and optical drives. Compatibility issues, installation hints, and tips on increasing system performance are included. Don't miss the benchmark chapter with performance and reliability test reports. CSC's drive performance test software is included. Essential reading for dealers and system integrators.

All drives meet or exceed all factory specifications. Although you won't be needing it, every drive includes CSC's fast turnaround 90 day warranty and tech support. CSC also carries a complete line of new and refurbished large capacity drives and controller cards. Call for more information.

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Rodime 5128S	105 Meg SCSI	5.25"	18ms	250
Rodime 3088T	72 Meg SCSI	3.5"	18ms	225
Microscience 4070	62 Meg MFM/RLL	3.5"	18ms	250
Seagate ST-225	20 Meg MFM	5.25"	65ms	99
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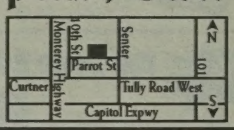

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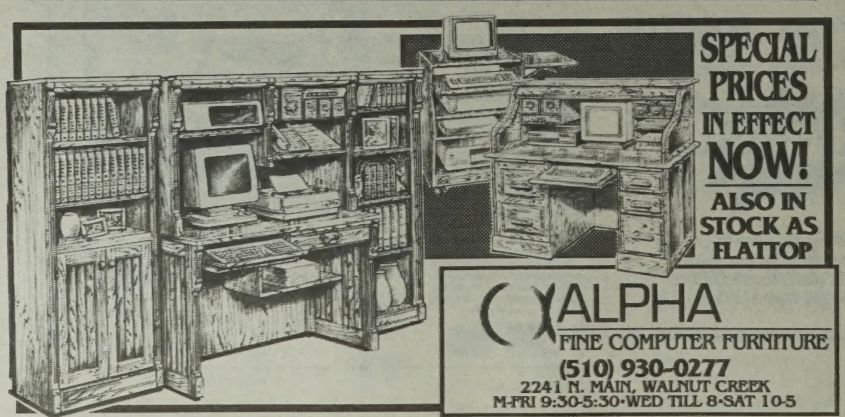

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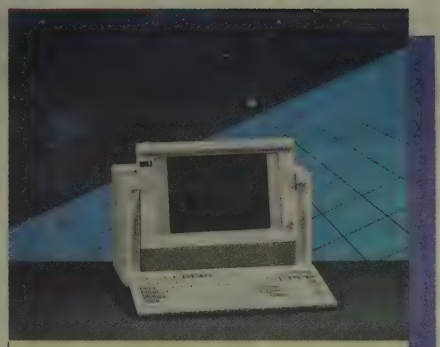

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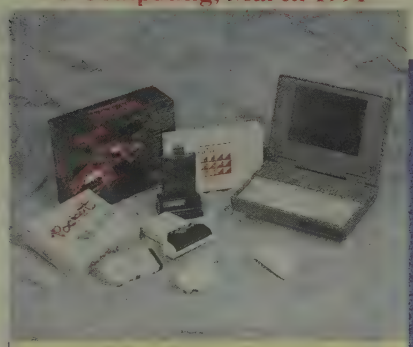

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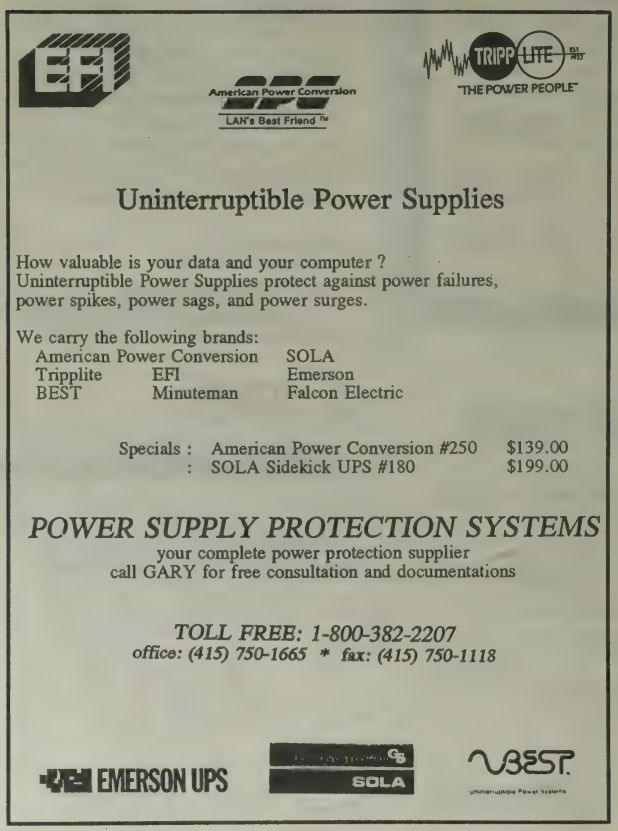

CONTRIBUTORS

Lenny Bailes is a teacher and consultant in the Bay Area. He's been writing about personal computers for *MicroTimes* and other publications since 1987. His current project is a book on PC memory management. You can reach him via the Internet as *jroe@well.sf.ca.us*.

Marv Downey is founder and owner of Market Value Systems, a Value Added Reseller (VAR) organization in Berkeley which specializes in real estate appraisal computer sales, consultation, and training.

John C. Dvorak is the author of many books, articles, and columns on computer-related and other subjects. His radio program, "Dvorak on Computers," is heard on Sunday afternoons on KNBR in San Francisco.

Bennett Falk works at Sybase and takes a great interest in UNIX. When not in the Viosphere, he can often be found playing drums with various Bay Area club bands.

Paul Hoffman is an industry analyst who's been writing about microcomputer technology for ten years. He also writes books about popular microcomputer topics, including several on Microsoft Word.

Ed Kahn is our laptop computer maven. Based in Studio City, he's interested in portable computers from handhelds to luggables. He's also the co-author, with Charles Seiter, of *The Skeptical Consumer's Guide to Used Computers*, still one of the best introductions around to the vagaries of the computer industry from the user's perspective.

Contributing editor **Matthew Leeds** works at Brøderbund Software. He is also a writer and photographer, and has been writing about the Amiga almost from the day it shipped.

Woody Liswood is vice president of marketing for Software City. He has also been writing about microcomputer hardware and software since 1980—his articles have appeared in the *Whole Earth Software Review*, *Personal Computing*, *PC World*, and *Compute!*, and he has published a book on micro-based Human Resource Information Systems.

Noted SRI futurist **Tom Mandel** makes a guest appearance to talk about Ashton-Tate's Framework, one of his all-time favorite software packages.

Mike Markowitz has been writing about games for us since our first issue. His "Your First Computer" series resulted from user questions at the Southern California university computer lab, where he is often called upon to solve problems ranging from fried disks to disconnected printers to Internet access.

BMUG's **David Morgenstern** works in the library of a major Bay Area university. When he's not there, he's usually doing something neat with computers, Mac and otherwise.

Joining us for the first time this issue is **Tony Reveaux**, whose multimedia coverage will be appearing regularly in future issues of MicroTimes. Tony is a San Francisco-based consultant; he's also the editor of *Computer Publicity News* and a contributing editor of *Artweek*.

Adrian Stern is a CPA and partner in the accounting firm of Clumeck, Stern, Phillips & Schwartz in Encino, California. **Teri Kaldhusdal** and **Carrie Steger** work with Mr. Stern at the same firm.

Among other things, contributing editor **Jim Warren** founded *InfoWorld* and the Computer Faire. More recently, he organized the First Conference on Computers, Freedom & Privacy.

Wayne A. Yacco is an editor, writer, and consultant specializing in business applications of microcomputers. He's a frequent contributor to many trade and business publications, and lives in Burbank. ■

NEWS RELEASE

tote-a-lap SPINS OFF INTO HARD DRIVE UPGRADES

tote-a-lap, a Foster City, California manufacturer of memory upgrades for laptops and notebooks (and a few desktops), is now offering hard drive upgrades for most brands of laptops and notebooks. Hard drive offerings include a 40MB upgrade for the Toshiba T1200XE, to a 60MB upgrade for a Texas Instruments TM 3000, to a 200MB upgrade for the Toshiba T5100 and T5200. In most cases, **tote-a-lap** includes a BIOS upgrade with the drive, which needs to be installed as a replacement for the existing BIOS. Customers have the option of sending their laptop or notebook to **tote-a-lap**, or if they are technically inclined, doing the upgrade themselves. Prices range from $328 to $998, and include all parts, labor, data transfer and a full year warranty.

tote-a-lap ALSO DROPS PRICES DRAMATICALLY ON MOST MEMORY UPGRADES

tote-a-lap announced further that it has just dropped prices on almost all of its memory upgrades. A 2MB upgrade for the Toshiba T1200XE, for example, now sells for just $98, while a 4MB upgrade for the AST Premium Exec Notebook sells for just $188, and an 8MB module for the Toshiba T5200, which **tote-a-lap** claims is the only one in the market that is identical to Toshiba's offering, sells for just $488. **tote-a-lap** also offers a much wider range of memory upgrades for laptops and notebooks than any other manufacturer, including upgrades for off-brands like Nihon, Unisys, Zeos, Ogivar, Grid, etc.... In addition, all of **tote-a-lap's** upgrades come with a lifetime warranty and a 30-day money-back guarantee. **tote-a-lap** is also 1 of only 7 third-party memory manufacturers officially recognized by Toshiba America, and is officially listed in Toshiba's Technical Information Bulletin Guide as having the least expensive memory upgrades APPROVED for Toshiba laptops and notebooks.

tote-a-lap has also just announced the availability of the 1MB and 4MB memory upgrades for the Compaq LTE386s. In addition, **tote-a-lap** is also now shipping a 512K, a 1MB, and a 2MB upgrade for the Hewlett-Packard HP 95LX palmtop computer. Prices were not available as of press time, but tote-a-lap guarantees that they will be offered at rock-bottom prices to the general public, much like the rest of **tote-a-lap's** product offerings. ■

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INDUSTRY INSIGHT

No-Server NetWare, New Operating Systems From Digital Research And Sun, Intel Enters Network Market

BY PAUL HOFFMAN

NOVELL'S NETWARE LITE

Running a network without a server is nothing new, but Novell has only recently acknowledged the need for serverless networks. Many early PC and Macintosh networks didn't require a server, but they often ran slowly, since the networking software had to contend with the regular operating system when another user requested access to a file. Novell, long the leader of the networking market, always required a dedicated PC running its NetWare software as a server. This locked small companies out of the Novell market, since few people wanted to buy an expensive machine just to use its hard disk.

The new entry-level option, called NetWare Lite, looks much like other peer-to-peer networking systems such as Sitka's TOPS. It provides few features, but these are probably enough for 75% of the small companies in the US. Basically, NetWare Lite lets computers share hard disk files and printers. There is also some very low-level messaging, but most people won't even bother with that. They simply want to use files from each other's hard disks without having to walk them around on floppies or buy a server. Novell will sell NetWare Lite for $99 per user, significantly less than other low-end network software.

NetWare Lite uses much less RAM memory than Novell's other programs, making it easier to run on standard PCs. To have access to other computers' files, you lose about 30K; to allow other computers access to your files, you lose about 50K. Most small offices have one computer with a much larger hard disk than the others, so it is likely that only one of the computers will have to sacrifice the full 80K. Even if everyone wants to be able to share, losing 80K (30K of which can be in high memory) is not nearly as bad as the 150K usually needed for networking.

NetWare Lite has less security than most other peer-to-peer networking programs, but enough for an office where little security is needed. There is rudimentary password protection for files in a directory, and protection for printer sharing, but that's about all. Novell strongly recommends that people who need better security should upgrade to a full NetWare system.

SUN'S NEW OPERATING SYSTEM FOR PC USERS

Sun announced that the next version of its Solaris operating system (previously called Sun OS) will run both on Sun's RISC processors and on PCs with 80386 or 80486 CPUs. It will be available by next summer, according to Sun's software spinoff, SunSoft.

Solaris v2 will bring Sun to the attention of the many companies who have never bought Sun or Sun-compatible hardware. Solaris will have more features and probably be more reliable than Microsoft's Windows NT, given that Sun has been working on it for many years. Solaris will be based on AT&T's UNIX and will support networks, object-oriented computing, and multiple processors.

SunSoft hopes to take the high-end PC market by storm, and may be able to bypass the established PC UNIX vendors within a year or two. Some of the advantages of Solaris that PC users will see include Sun's Open Windows graphical user interface, and its transparent LAN functions. Sun's slogan, "The network is the computer," will be even more true in Solaris 2 when programs can

NetWare Lite provides few features, but probably enough for 75% of the small companies in the US. It lets computers share hard disk files and printers. Novell will sell NetWare Lite for $99 per user, significantly less than other low-end network software.

Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on Internet (phoffman @well) and MCI Mail (264-3171). He also writes popular microcomputer books.

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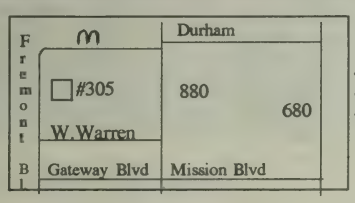

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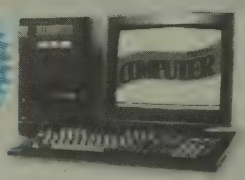

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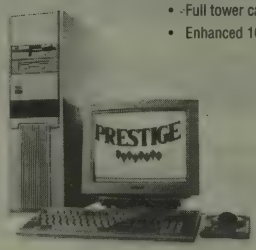

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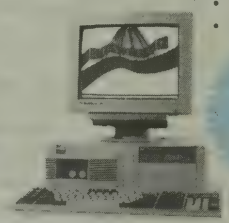

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- 1 Game port
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start remote procedures over the network on different types of computers invisible to the user. Sun's software market is already quite mature, and Sun assures its vendors that they will be able to create programs that will run on PCs with a single recompilation.

Although Microsoft's Windows NT will probably cost less than Solaris, it will start off with many fewer programs. Solaris will probably compete in price with the current popular PC UNIX systems from Santa Cruz Operation and Interactive. For companies with both Sun systems and PCs, Solaris will probably be the automatic choice for the PCs, since they will be able to hook into the network in an identical fashion as the Sun systems.

For non-Sun sites, Solaris will look attractive to system administrators who have struggled with networking and user interfaces for years. The high price may be mitigated by site licenses or price bundles, depending on how aggressive SunSoft becomes. They have already announced that the PC version of the operating system will be sold through Novell's well-established retailer channels. Sun will also make a strong push in international markets, starting with a Japanese version of Solaris 2 next summer.

INTEL JUMPS INTO NETWORKING MARKET

Few of Intel's non-chip businesses pan out, although its consumer-oriented PC boards have sold well based on Intel's name. Now Intel wants to be a generalist in the networking field, announcing and delivering two dozen hardware and software products that cover almost the entire range of PC networking.

Intel may win the hearts of the corporate PC world by releasing diagnostic hardware and software at the same time as it releases new networking boards. Given that networking seems to be the most trouble-ridden area for corporate PC users, Intel's more complete solution could compete well with the offerings from vendors such as Novell and Banyan.

Since Intel is arriving late in the market, it had to differentiate itself from the other players. Its offerings are significantly easier to install and maintain than current competing products, a fact that should get its foot in the door. For example, its Ethernet cards (listing at $200–$225) detect the type of PC you have and automatically configure themselves when you install them. Intel is one of the first companies to eliminate all switches from the boards so that they can be reconfigured without having to open the PC. Intel will also offer $700 token-ring cards. The cards will be faster than less expensive cards, since they come with 128K of RAM for buffers and can act as bus masters.

On the software side, Intel also released a line of LAN management software to insure and monitor security and reliability on the network. The different software packages can watch network traffic and the protocols used, allowing a manager to generate reports on what is happening on the network and to look for faults. Intel has priced the software comparably to its competitors' products. Intel also announced a printer spooler and software for sharing FAX boards.

None of Intel's products is revolutionary, but Intel has made a credible entry into the already-tight market. Because Intel has a huge research budget, it is likely that it can keep up with competitors if it decides to stay in the market for the long term. Intel has had a habit of dropping out of markets that it did

Continued on page 238

SunSoft hopes to take the high-end PC market by storm, and may be able to bypass the established PC UNIX vendors within a year or two. Some of the advantages of Solaris that PC users will see include Sun's Open Windows graphical user interface, and its transparent LAN functions.

Technology News From Japan

(Excerpted from the weekly news digest of Japan Marketing Group, 400 Groveland Ave., Suite 312, Minneapolis, MN 55403, 612/871-7889. JMG covers products and events in the Japanese computer industry.)

➤NEC has developed a Braille PC with audio output. Users with partial or complete vision impairment can type in on a standard Braille keyboard and confirm their input by listening to the synthesized voice. The computer is based on the NEC 9800 series and will run all of the software for that series. The computer will only be available in Japan, since there is almost no market for NEC 9800 systems in any other country.

➤NEC will also open a training center that will offer free PC instruction to elementary, junior, and senior high school teachers. The center will be in Tokyo and will have a network of 88 PCs with educational software. Japan's schools will begin buying computers in earnest next year, so many manufacturers are trying to influence teachers' and principals' buying decisions. NEC said that they will set up other free training centers in the next year.

➤Apple Japan dropped the list price of the Macintosh Classic in Japan to approximately $1300 without a hard disk and $2000 with hard disk. They also introduced new models based on the Mac IIci. Apple has done very well in the Japanese market in the last year; the Macintosh is rapidly becoming the computer of choice for low-cost desktop publishing and other creative computer uses.

➤Microsoft will release Japanese versions of its two popular Windows programs, Excel and Word for Windows, this month. Windows 3.0 has started to become popular in Japan, since it can show Japanese kanji characters in a standard fashion. Most American Windows products run on the Japanese Windows 3.0 but do not access the native Japanese scripts, severely limiting their sales. The new Windows packages will be among the first to use kanji.

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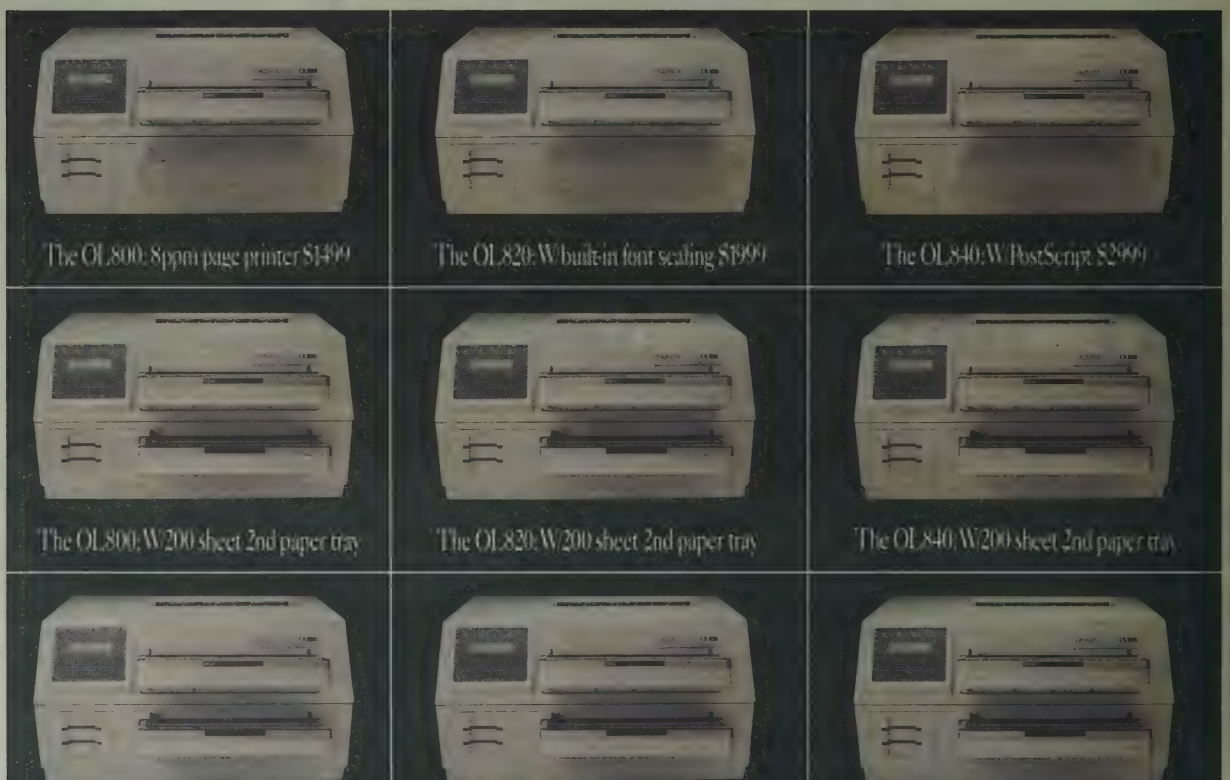
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As your needs grow, you can easily add options that are *no* option with the LaserJet® III—a second paper tray for more flexible paper handling, or a network port that automatically accepts output from three additional PCs in a workgroup. You can even upgrade your OL800 to match either of our high-performance printers described below.

The OL820: Faster Than A LaserJet III.

Besides having more resident scalable fonts than the LaserJet III (13 versus 8), the OL820 also has more brains. Thanks to a unique hardware chip designed by Okidata engineers, it instantly solves complex font scaling, type rotation and grayscaling problems "on the fly"—problems the LaserJet has to go back to its software to work out.

So the Okidata OL820 can deliver up to three pages of sophisticated text while the LaserJet III is still thinking about printing its first page. In fact, InfoWorld magazine found the Okidata OL820 to be "the fastest office printer we've tested."

Second paper tray and 4-station workgroup options are available for your Okidata OL820 as well.

The OL840: PostScript From PC To Mac And Back.

If Adobe PostScript® printing is on your menu, the Okidata OL840 offers it for $700 less than a comparably equipped HP. Yet that low list price includes 35 genuine Adobe PostScript fonts, plus 26 bitmapped fonts (4 typefaces); 2 megabytes of installed RAM; plus serial, parallel, and AppleTalk Network® interfaces. You can connect the OL840 to both PC and Macintosh® workstations, and switch between systems instantly.

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Wilco AMS offers one stop shopping for HP LaserJet sharing systems and enhancements

Wilco-AMS offers a full range of HP LaserJet enhancement products including Wilco's printer sharing systems, PostScript controllers, font cartridges, a LaserJet facsimile server, and TruePoint, a revolutionary 600 x 600 dpi video controller system.

Wilco supplies affordable, high performance printer sharing systems including models that plug right into HP LaserJet II, IID, III, IIID and the new HP LaserJet IIISi printers. As many as fifteen computers can be connected to a single printer! Wilco also offers models for sharing any two printers or even plotters. Any combination of computers such as IBM PC compatibles, Macintoshes, terminals, minicomputers and LAN print servers can take full advantage of these and other powerful products from Wilco. Cabling installation service available.

For further information, **contact Wilco at 408-436-3993.**

Boardless, plain paper faxing for LaserJet printing workgroups

JetFax gives users of enormously popular HP Laser printers an extremely inexpensive way to get incoming laser printer-based, plain paper fax documents...and, transmitting faxes is a breeze. Price is roughly one-fifth to one-tenth the cost of laser-based fax units.

For further information, **contact Wilco-AMS at 408-436-3993.**

All product and company names herein are trademarks of their respective companies.

New LaserCard Si connects any combination of PCs, Macs, minis, terminals and LAN servers to an HP LaserJet IIISi

SAN JOSE, California -- Wilco AMS Inc., a supplier of workgroup laser printer systems, recently announced the LaserCard Si family of "plug-in" printer sharing systems.

Up to fourteen serial ports utilize four wire, telephone-style modular cables providing an easy-to-connect and low-cost cabling method.

LaserCard Si (LC15Si)

Cable lengths to 1000 feet are supported. An IBM PC program, LASER.EXE increases serial speeds to 115.2KBaud, six to twelve times faster than typical serial connections. A high speed parallel port is included for connection of a nearby PC or network server.

For further info., **contact Wilco at 408-436-3993.**

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Satiating The Senses

Human-Friendly Computing Environments

BY JIM WARREN

This column is about what isn't, but could be—as soon as you build it. Technological breakthroughs not required.

MAKING MORE SENSE

Let's have infrared sensors as plug-in, RS-232 peripherals. They should input the exact infrared frequency and pulse-rate that they sense, as ASCII-coded digits or appropriate binary. Add infrared emitters for output, and we could finally program arbitrarily complex control of all those wireless-remote audio and video gadgets.

Just what we always wanted—a 20lb., $3000 replacement for half a dozen wireless controllers. What's that about the difference between men and boys being the price of their toys? Well, at least it's *one* use for those obsolete [circa 1990] computers stored in the closet.

REALIZABLE FANTASIES

Copyright © 1991 by Jim Warren, 345 Swett Rd., Woodside CA 94062. All rights reserved. *Jim Warren founded* InfoWorld, *the DataCast proposal for paperless electronic newspapers, Wireless Digital. Initiative, Inc., and one of the nation's largest public microcomputer conventions. He was founding host of PBS's "Computer Chronicles", founding editor of* Dr. Dobb's Journal, *and has chaired various computer professionals' organizations. He holds graduate degrees in computing (Stanford, before Reges' firing & research ripoffs), medical information science (UC Medical Center), and mathematics.*

He also organized and chaired the recent First Conference on Computers, Freedom & Privacy, sponsored by a dozen nonprofit and industry organizations.

FACING ASCII

If you're not yet online, that's OK; you'll catch up sooner or later. You may as well learn net-surfers' ASCII-based facial expressions—using character combinations sometimes called "smileys." Looking at them sideways, imaginative viewers can see facial expressions. You are herewith invited to learn how to read:

:-) smile; :-(sad; ;-) mischievous; /:-) Reagan—and many more.

Admittedly, things get weird in systems where single colons at beginnings of text-lines flag them as commands, but that's inhuman design of a different kind.

(ASCII: American Standard Code for Information Interchange, which assigns binary codes to most traditional keyboard characters and commands. Also the name of the second computer hobbyist magazine in Japan, founded in the late '70s by Kazuhiko Nishi—before he made millions.)

VISIONARY

Remember when properly uniformed Nerds wore pocket protectors, flip-up sunglasses, and belt-hung slide rules? (For younger readers: A slide rule was a length-analog calculator, sandwiched in history between an abacus and a digital calculator.)

Given developments in flat-panel displays and virtual reality, FutureNerds may replace their flip-up sunglasses with flip-down computer displays (idea from Jay Thorwaldson of Woodside). And transparent panels will allow the same eyepiece to darken, blocking too-bright light, when not in use as a digital display. Of course, these'll play hell with cheat-sheet-seeking teachers. But then again, Nerds don't need cheat-sheets; they'd only use 'em for the thrill of the hunt. :-)

This idea is somewhat like the present-day Private Eye—the tiny 1" x1" x3" headband-mounted display that hangs a few inches in front of your eye. It's a heads-up display without tax-paid DoD kilo-cost. Colby Systems (Palo Alto) has a BeltMac semi-clone, about the size of a full-height disk drive, that hangs from your belt and allows use of the Private Eye for display, plus Voice Navigator for input. Useful for hands-free reading or work, or perhaps displaying a graphic or diagram, seen in one eye, overlaying a real-world view through the other eye—interesting for architects, engine inspectors, game-makers, etc. Just think of the possibilities.

But we want more! Let's put a digitizing camera on the other side of the Private Eye display. Then it can watch and remember, as well as show and tell, with voice output. (While checking the above details, Chuck Colby said they've already prototyped the camera—so much for "new" ideas.)

NO HUM!

For those who once programmed room-sized computers and used 800lb. photo-typesetters, it's especially neat to have a much more powerful micro plus a publication-quality printer, all on a desktop with room to spare. But now that they've invaded the solitude of office, den, and bedroom, they need to be quiet. The whine of disks and whir of exhaust fans is akin to fingernails on chalkboards for

Designers who place on-off switches and control buttons and knobs (brightness, contrast, reset, etc.) in back of machines should drive cars with their ignition switches under the hood! Controls intended for human use should be where the humans are—in the front of the computer.

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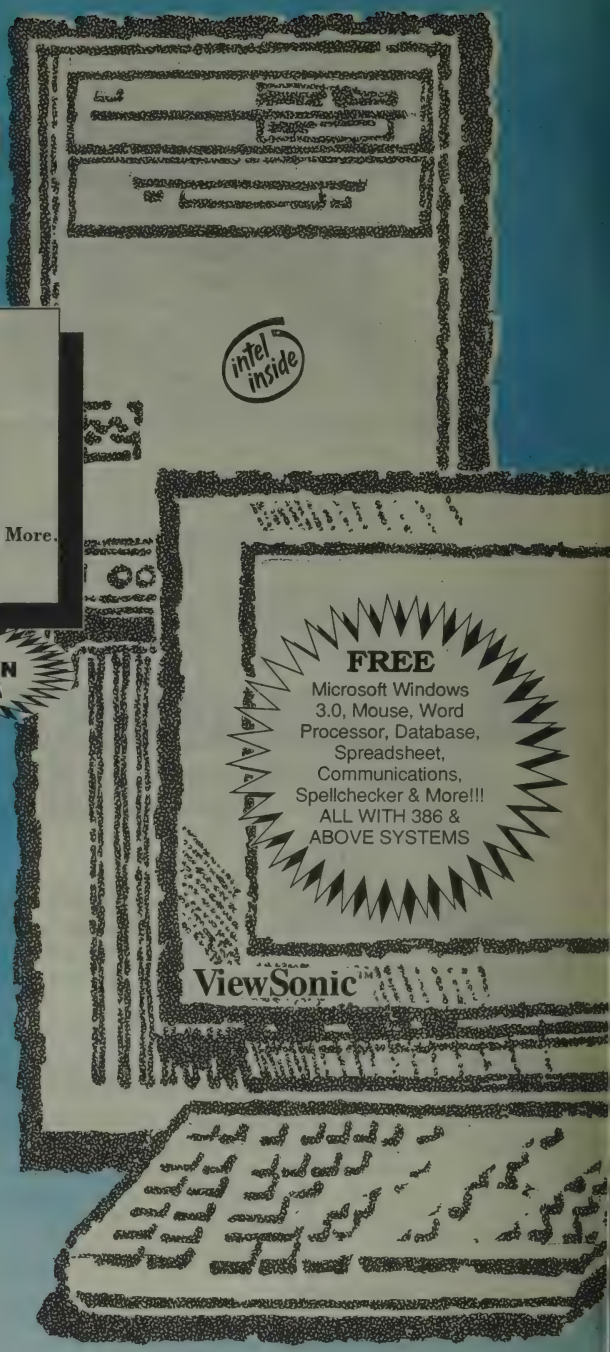

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many folks.

The outstanding game designer Chris Crawford once told me of going to great lengths to place his computer in a soundproof enclosure near his desk. Personally, I put the computer under the desk to reduce the irritation—then perform contortions to insert a diskette, and crawl under the desk to reach the reset button.

Build Subsystems for People and They Will Come: Don't put the video RAM in the computer; put it in the (fanless) monitor enclosure. Allow several diskettes in the space below the monitor—and be sure the drives power-down after a short period of nonuse. Include plugs for a mouse and keyboard—in the front of the enclosure.

Two cords should plug into the rear of the monitor—plug in, not be permanently attached. One is the power cord. The other is a single computer cable without length-limiting analog-video signals. Offer extension cords; engineer the system for, say, a 100-foot maximum. Ideally, permit use over one or two quad-wire phone lines.

At the computer end of the computer cable, have four plugs to fit current designs—one for the computer's keyboard port, one for the mouse port, one for a diskette module, and one for a monitor card. The diskette module would fit in place of a quarter-height diskette drive, plug into any standard diskette controller/interface, and communicate with the far-distant desktop diskette drive(s). The monitor card would plug into the bus, just like a standard video card—but would do no more than send display-rate digital signals to the real video RAM housed in the monitor enclosure.

Now, if someone could just figure out a comparable component-solution to the whine of heat-seeking laser printers and other desktop devices...

Call your company "Beyond Computers," or perhaps simply "Solitude." Make millions.

HUMANE CONTROLS

Speaking of whines—and snarls: Designers who place on-off switches and control buttons and knobs (brightness, contrast, reset, etc.) in back of machines should drive cars with their ignition switches under the hood! Controls intended for human use should be where the humans are—in the front of the computer, display monitor, disk drive, etc. Switches needing protection against casual or accidental use can be covered with a sliding cover—increasing manufacturing cost by less than a dollar.

And, please—make it a sliding and removable cover, not a hinged, attached door. Reduces cost, doesn't need clear space for door-swing; the removal option allows us the convenience of living dangerously—like not having to type "yes" every time we give an "erase file" command.

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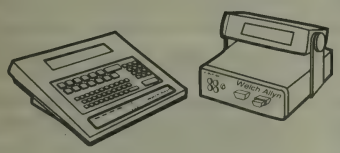

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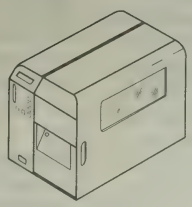

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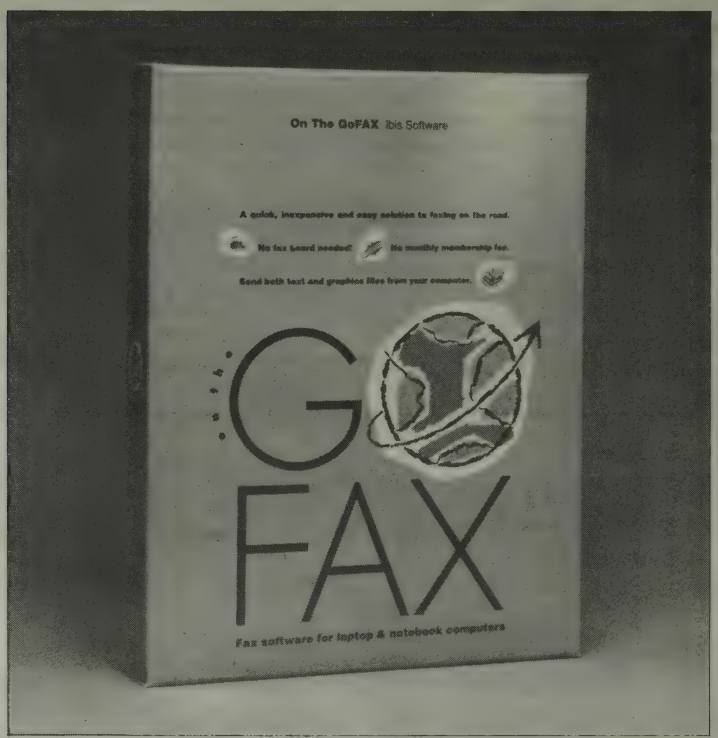
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A quick, inexpensive and easy solution to faxing on the road.
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GO FAX
Fax software for laptop & notebook computers

BY ED KAHN

Increasingly, in the modern integrated office, portable computer users insist upon having fax capability built into their modems. This is becoming easier to do, as many external and some internal modems now feature fax capabilities as an option. But for the user who sends few transmissions from the road, this is often too expensive to be justified. Ibis Software has come up with an alternative that makes sense to the portable user who only sends an occasional fax.

On The GoFAX is a software solution. You prepare and send faxes in much the same way you would other documents on your computer; sending either text or graphics, but not mixing them. Instead of sending the fax directly to the recipient, however, you dial your modem to an AT&T 800 number that receives the data as a standard modem transmission and retransmits the document as a fax to the recipient.

Ibis has worked all this out in a nifty way. You open an account with Ibis—by using up to two credit cards you can charge faxes to different accounts. You will be billed on the basis of pages successfully sent, and there is no monthly minimum charge. A secret password protects your account from unauthorized use.

So why does anybody bother with a fax card? Because this service is expensive. It costs you as much or more than fax services found in hotels and storefronts that charge you by the page. On The GoFAX charges $3.00 for the first page and $2.00 for each additional page of a transmission. What the software does offer is a great convenience. For $69.95 you get the software and can begin.

The software is sophisticated. You can, for instance, broadcast the same fax to multiple destinations. The program holds names and fax numbers on lists you create. It also has a word processor that allows you to compose up to three pages of text, saving you the time normally spent importing text from a word processor. Text files, also spreadsheets and database files, must be in ASCII. To transmit a document, you must remember to either create it in ASCII or export it to a file stripped of special codes. And finally, the program logs your transmissions, giving you a complete record of what was faxed to whom.

The system requirements are basic and straightforward—it will work on any modern laptop or notebook computer equipped with a modem. On The GoFAX cannot receive faxes. This and other improvements are said to be on the way. AT&T, who handles the retransmission, is working on being able to mix text and graphics in a single transmission. They promise this capability soon.

UNDERSTANDING YOUR NOTEBOOK AND OTHER COMPUTERS

Connecting a modem on the road is relatively simple, but for those of you who are still in the early stages of computer addiction, you might want to consult an excellent book that gives you advice on this and hundreds of other topics. *PC Magazine Guide to Notebook & Laptop Computers* ($29.95), by Bill Howard, with an introduction by John Dvorak, is the type of book I have been waiting for. I am often asked to suggest a good book for computer novices who know little about computers, and need clear and concise answers to basic questions. Finally, I have the book to recommend.

Bill Howard covers a wide range of topics. And while he has targeted this book to laptop and notebook users, most new, but not brand new, computer users will find this

RESOURCES:

On The GoFAX, $69.95
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***PC Magazine Guide to Notebook and Laptop Computers*, $29.95**
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Toshiba T2000SX, 60MB HD	$3,189
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Toshiba T2200SX, 40MB HD	$3,543
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- PC Magazine

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SUMEX Corporation is introducing a computer system line that is upgradable from 286, to 386SX, to 386DX, to 486SX, to 486DX by changing a single Processor Module, and the product line is priced as competitively as conventional, non-upgradable computers.

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Hard Disk	40MB	40MB	40MB
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Mouse Port	1	1	N/A
Keyboard	101 Key	101 Key	101 Key
Mouse	Included	Optional	Optional
VGA Card	1024x768	Optional	800x600
VGA Monitor	1024x768	Optional	800x600
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Price	$1,595	$2,895	$2,393

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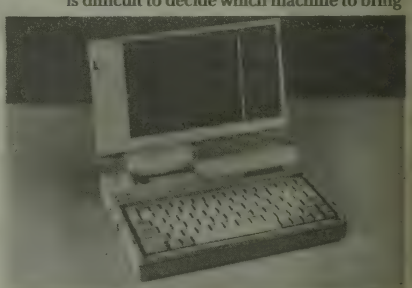
book helpful. Things like battery operation, LCD displays, and connecting modems on the road are more relevant to portable users. But topics such as hard disk organization, memory considerations, and computer information resources are of sufficiently general interest to be valuable to all computer users.

This book is not a discussion of various models and prices. Rather, it is a guide to features, capabilities, and their use. If you are contemplating the purchase of a portable, or if you just want a good discussion of computers, this book is for you. The book also includes a 3.5" disk of popular shareware and public domain utilities. ■

Computer Of The Month
The Blackship Notebook 386SX

What once was a trickle of new releases has turned into a flood. Each month I get announcements of so many new models that it is difficult to decide which machine to bring



to your attention—many of the units are so nearly alike that it is often difficult to distinguish between them. I try to find something unusual or unique to feature.

Oflate, the most striking thing about these new machines is how much you get for your money. This month's notebook is the lowest price yet for a full-featured machine. Blackship, a Bay Area vendor that sells directly to the public, offers a 386SX computer with 2MB, running at a speed of 20MHz for the astounding price of $1695, this includes a 20MB hard disk and a 1.44MB 3.5" floppy drive. You also get VGA color compatibility.

With prices like this, it is difficult to see how the big name manufacturers still charge

Getting the most out of your computers takes a team effort.

If you're looking for software that works well together, here's the starting line-up you should see in action.

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Thanks to a powerful AMD 29000 32-bit RISC processor, the LX-29000's font benchmark is the runaway winner (see chart to right)! It can print 35 fonts in just 66 seconds--faster than some printers costing 3 times as much!

✓ PostScript® & HP LaserJet II compatible!

The LX-29000 comes with 35 typefaces and uses Microsoft's TrueImage for full compatibility with PostScript, the professional standard for graphics and typesetting. It accepts Adobe Type 1 and 3 fonts as well as TrueType fonts. It works great with Windows 3.X, Apple System 7 and all Mac and PC software that supports PostScript or TrueImage printing. And its HP emulation easily handles non-PostScript printing.

✓ Uses Canon's dependable LX engine

The LX-29000 uses the same lightweight, small-footprint, 300 dpi, 4 ppm Canon LX engine used by HP, Apple and QMS, so supplies and service are never a problem. And Canon's patented all-in-one cartridge eliminates all that toner mess.

✓ For PC, Mac and Others

Prints from your IBM PC or Macintosh via Centronics, RS-232C or AppleTalk interfaces. Interface selection is automatic. The LX-29000 comes with 2 megabytes RAM, a universal paper tray and a toner cartridge.

✓ Printers are our business!

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◆ OPTIONAL ACCESSORIES FOR THE LX-29000 ◆

✓ Paper Feeders and Trays

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Envelope tray
Holds 20 envelopes. Requires paper feeder (sold above). $69.95

Legal paper tray
Holds 250 sheets of 8.5 x 14" paper. Requires paper feeder (sold above). $64.95

✓ Supplies

Additional toner cartridge
All-in-one toner cartridge for Canon LX laser printer engines, for rich blacks and crisp resolution. Rated for 3500 pages at 5% coverage For LX-29000, HP Laserjet IIP, Apple Personal LaserWriter series and many other well known brands. $79

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LX-29000	66	Canon	26	Yes	$79	$1295
GCC BLP Elite	225	OKI	24	No	$268	$1495
NEC Silentwriter II Model 90	213	Minolta	44	Yes	$209	$1595
QMS-PS 410	106	Canon	26	Yes	$79	$1925
QMS-PS 810 Turbo	99	Canon	44	Yes	$89	$3995
Apple Personal LaserWriter NT	165	Canon	30	Yes	$89	$1995
HP LaserJet IIP w/ Adobe cartridge	213	Canon	26	Yes	$89	$1525

◆ Optional Accessories for the LX-29000 ◆

✓ Cables

AppleTalk kit (DIN 8)
Connects an AppleTalk compatible printer (such as the LX-29000) to an existing AppleTalk network. Includes 12' phone cable.
$19.95

AppleTalk kit (DB9)
As above but for use with earlier Macintosh models with DB9 printer port.
$19.95

IBM Centronics cable
12-foot cable connects a Centronics compatible printer to a parallel port on an IBM PC or compatible computer.
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AppleTalk Cable
12-foot cable connects one Macintosh computer to one printer.
$12.95

✓ Fonts

Casady & Green Fluent Fonts (PC Version)
81 original Adobe Type 1 compatible fonts. Includes Adobe Type Manager (ATM) for Windows 3.0, plus installation software for WordPerfect and Microsoft Works for DOS.
$109
Mac Version $109

✓ On Site Service

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THE PRINTER WORKS

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such high prices. It is interesting to note that all the major players have substantially reduced their prices in the last six months. Nevertheless, with second and third tier manufacturers still applying the pressure, the demand is on for still lower prices.

The Blackship has an attractive design. You open the top to find an 8.75" backlit screen. It offers clear resolution. For full VGA color, it is necessary to connect either a VGA or multisync monitor. This is easily done through the fifteen-pin port on the back of the notebook unit.

The body of the machine holds an attractively designed keyboard, which unfortunately falls far short of my requirements for keyboard layout. I don't really care for the use of an Fn key, which unlocks the double use of other keys such as an embedded numeric keypad. But I realize that a small design makes this kind of arrangement necessary. And after all, it's easy enough to connect the keyboard of your choice. I feel that notebook computers are now so powerful that it is reasonable to have an external color monitor and full keyboard at your primary location or locations and use the built-in keyboard only when you are on the road. But nevertheless, I find it awkward to use the Fn key to access the PgUp, PgDn, Home, and End keys.

Except the keyboard layout, I found this a truly remarkable machine for the money. It is fast, sleek, attractive, and expandable. The 2MB of RAM can be easily expanded to 4 or 6MB (add $350 or $500). The 20MB hard drive can be upgraded to either a 40 or 60MB drive (add $300 or $500). An expansion chassis that will accommodate any 5.25" device and two full-size expansion cards costs only $325. This is significantly less than the cost of most expansion chassis. This machine can easily serve as a fully capable desktop unit. Unfortunately, only one serial port is available. This would be all right if there were the possibility of an internal modem, but with today's needs for both a modem and a mouse, this arrangement is a bit limiting.

The Blackship is powered by a rechargeable NiCad battery pack that lasts for upwards of two hours. Unfortunately, it takes nearly six hours to recharge the batteries from the supplied AC adapter. The setup software has many options for conserving power to get the most out of the battery when you use the machine on the road. Extra battery packs are available for $79 each.

The machine comes with a choice of either MS-DOS 4.01 or 5.0. (There is little need these days for 4.01.) Blackship also offers wonderful deals on additional software. For example, you can get Windows for $49. The 2MB of RAM that come with the machine make this perfectly suited to running Windows without modification. Blackship also offers Microsoft Works for $39—you can't beat that price anywhere.

To round out the package, carrying cases are provided for both the computer and the power supply. These cases are designed so they can be attached to each other and carried as a unit or separated for those times when you don't need the power supply.

While the product warranty is adequate, you must return the computer to Blackship to receive service. ■

RESOURCES:

Notebook 386SX, $1695.00
Blackship Computer Systems, Inc.
4031 Clipper Court
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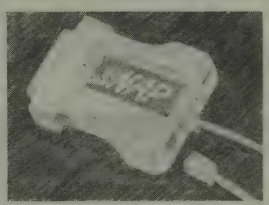

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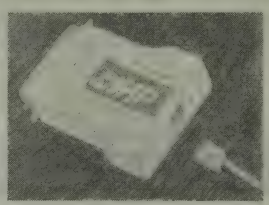

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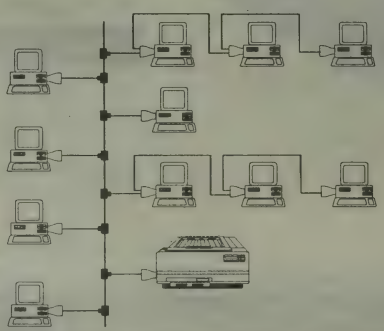

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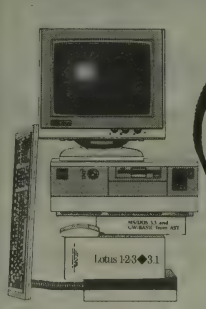

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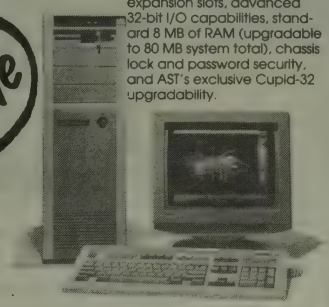

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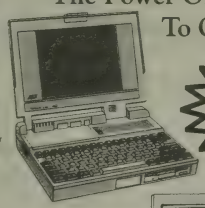

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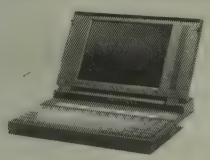

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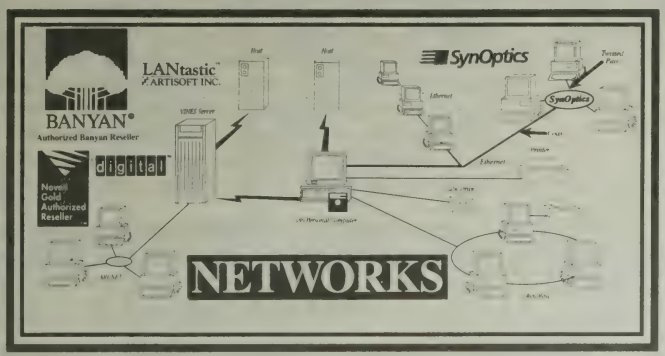


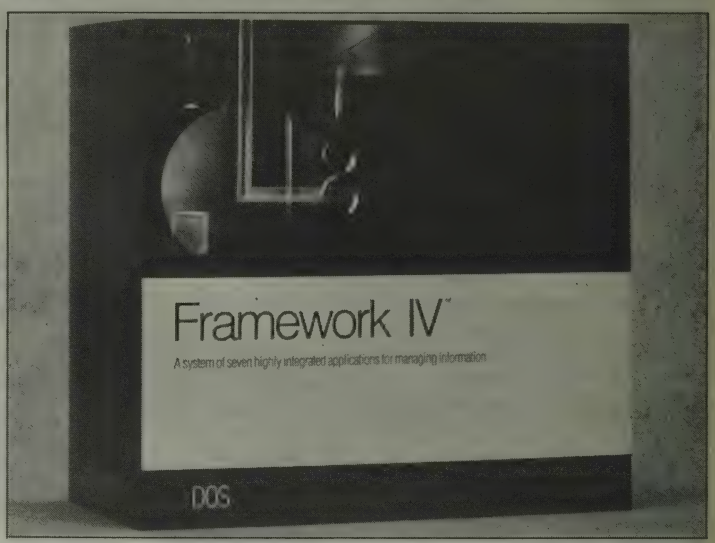
Framework IV: Still Ahead Of Its Time

Ashton-Tate's Integrated Classic Offers Powerful, Personalized Information Tools

BY TOM MANDEL

Framework IV is the fourth major incarnation of Ashton-Tate's sophisticated integrated software package for IBM PCs and clones. Significant improvements in the new release include proportional font support in Framework's word processing, direct access to disk-based dBASE files, and enhanced business graphics—all enhancements requested by customers since earlier releases.

Originally developed by Robert Carr (now at GO Corp. working on pen-based computer software), the original Framework arrived on the scene in 1984. Along with Lotus' Symphony, it was one of the first successful attempts to integrate the most important software functions—word processing, spreadsheets, databases, outlines, and telecommunications. It is also, in my view, by far the best of the many integrated products now on the market.



Framework was, and still is, personal software ahead of its time. About four hundred thousand people worldwide have figured this out over the years, despite Ashton-Tate's understandable preoccupation with its flagship dBASE software and its apparent failure to figure out how to position Framework effectively. Despite a few weaknesses in terms of today's marketplace, notably its non-graphical user interface, Framework stands out as the most effectively integrated software package available on personal computers.

THE FRAME INTERFACE

Framework is organized around the concept of "frames," which can contain text, graphics, quantitative data, and programs written in Framework's full-featured programming language, FRED (for FRames EDitor). There are four types: text frames for word processing, database frames, spreadsheet frames, and graphics frames. All of these can be created or used on Framework's desktop (with a detailed but straightforward system of pull-down menus and various kinds of status information below), or they can be organized hierarchically as outlines.

While none of these modules provides all the features of the most highly specialized word processing, spreadsheet, and other programs, they provide, together with other program features, a more powerful collection of personal tools than any other software package available.

The only limitation on the number of frames and the amount of information contained within them is the amount of available memory on the machine. Framework IV runs on everything from PC XT to high-speed, high-memory, PC-compatible 80486 machines. It takes full advantage of additional onboard, extended, and expanded memory using its own or other standard drivers, and operates happily under every version of DOS from 2.11 to 4.01. (Framework IV is not "certified" for DOS 5.0, but I've had no problems running it under DOS 5.) The ideal hardware setup for Framework IV is a fast, compatible 386 with a large hard disk and DOS 4 or higher.

Framework IV is fully integrated. Virtually all commands (and programming language features) work exactly the same way in each of the program's different elements, an enormous benefit for someone who uses a lot of different features, as I do. There is also a lot of variety and useful redundancy built into the command structure; there are two or three different ways of doing most things in Framework IV, allowing users to adapt the program to their personal styles rather than having to adjust to the typically limited idiosyncracies of more specialized programs...and then remember entirely different commands from one program to another.

It is impossible to describe all of Framework's features in a review of this length, but I'll mention some of the ones I find most useful.

TELECOMMUNICATIONS

My work involves a great deal of computer-based communications, and I use Framework IV's two main telecomm elements heavily to gather information, stay in constant touch with clients, and use computer conferencing services like CompuServe and The WELL.

Copyright © 1991 by Tom Mandel. All rights reserved. *Tom Mandel is an internationally known futurist who conducts studies of the long-range future for businesses and governments at SRI International, the Menlo Park-based global research and consulting organization. He has been using different versions of Framework since 1984.*

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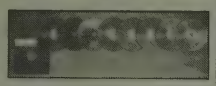

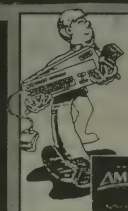

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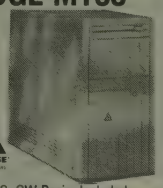

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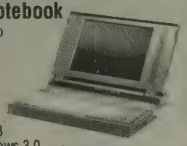

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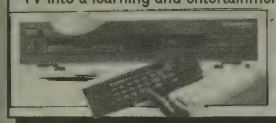

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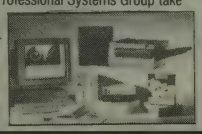

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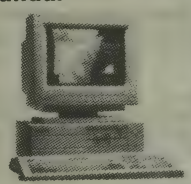

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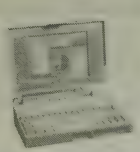

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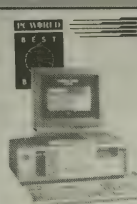

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First, Framework has a full-featured telecommunications module, which allows me to connect to other computers via modem. It comes with XMODEM, YMODEM, KERMIT, Crosstalk, and other file transfer protocols, and with a wide range of standard terminal emulators, including Minitel. I have yet to find a computer system to which Framework will not connect me.

Second, Framework also has a built-in MHS electronic mail element, allowing me to exchange email with other MHS systems and software products directly or via LANs and WANs.

Framework provides full LAN support, a feature that I do not normally use, as I work in an organization that uses Macintoshes for most work. However, we use a TOPS LAN to connect different machines, and I access network printers from Framework IV through TOPS seamlessly.

WORD PROCESSING

Framework's word processing element includes all the standard tools (page layout, dictionary, thesaurus, footnotes, a ruler, subscripts, and superscripts). Framework IV adds a number of useful improvements here: proportional spacing in text documents, spreadsheets, databases, and graphs; access to as many as sixty fonts per document from a special font menu; font support for HP LaserJets and DeskJets and Canon LBP and compatible printers; and a WYSIWYG document preview feature.

SPREADSHEETS

Framework IV's spreadsheets have changed little from earlier versions of the program. The spreadsheet element comes with a full range of FRED "verbs" (program functions); after a little experimenting with the FRED language, it's very straightforward to create extremely sophisticated spreadsheet models.

Framework stands out as the first program to provide linked spreadsheets, a feature that is becoming more popular in standalone spreadsheet products today. I use dynamic spreadsheet linking to build multiple budgets, forecasting models, and the like; making a change in one spreadsheet cell changes linked data in other cells and on other spreadsheets automatically.

DATABASE

Framework IV provides significant improvements in Framework's database capabilities (the feature I tend to use the least). Instead of enhancing Framework's native database element, which is a fairly simple "flat" database, version IV of the program gives users direct access to .dbf files, modifying them from Framework. In my view, Framework's richness and ease of use provide a far better front end to dBASE databases than do the dBASE products themselves.

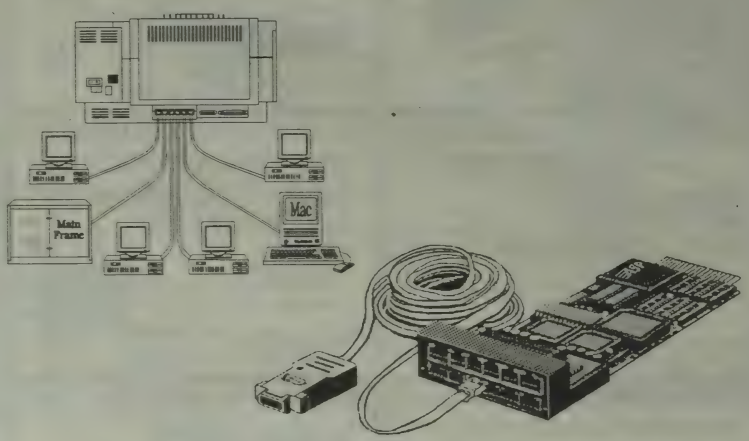
OUTLINE

Framework IV's outline element is the organizational heart of the entire program. I used the original ThinkTank outline product when it first came out, but switched to Framework because its outlines are much more powerful.

Continued on page 242

Hassle-Free Printer Sharing

for the HP LaserJet II, IID, III and IIID



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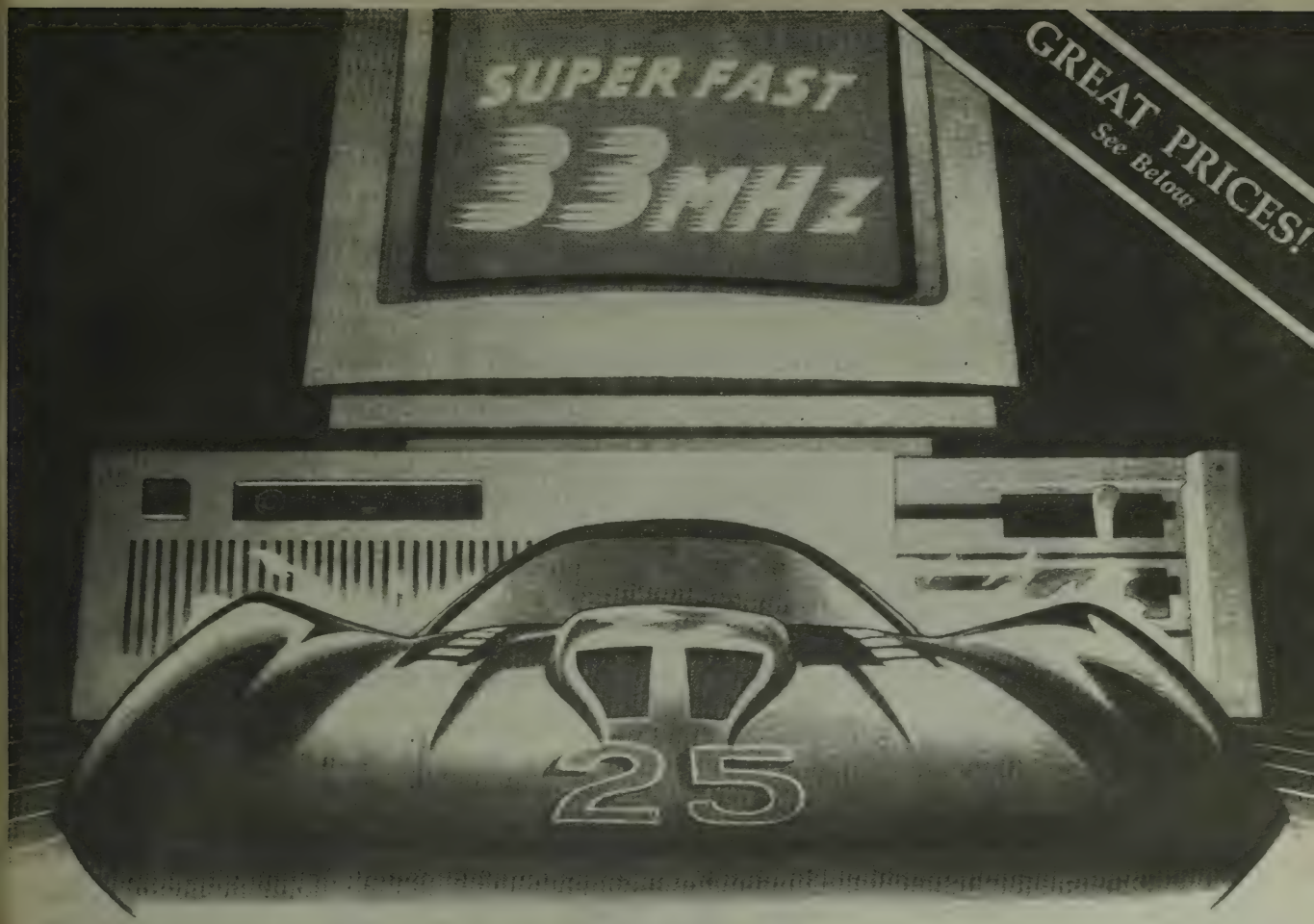

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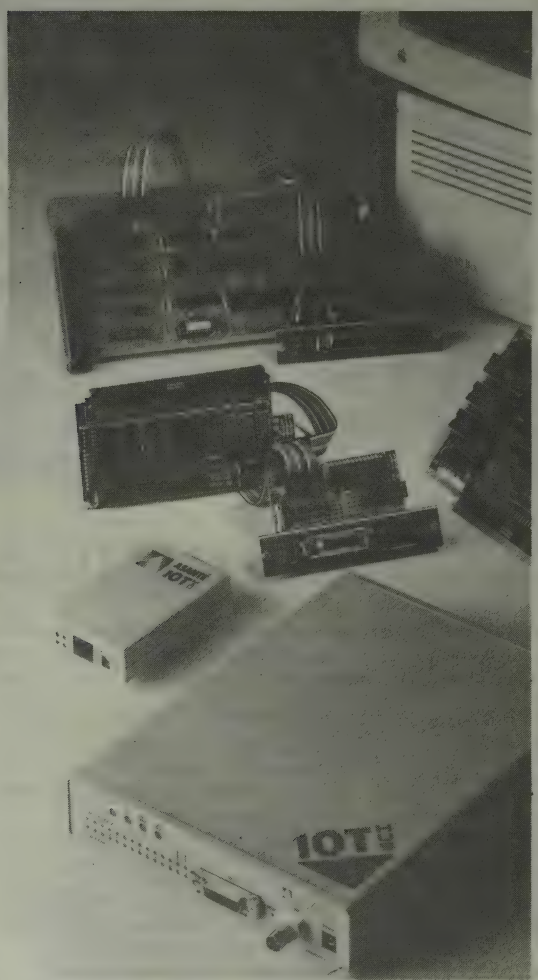
Going From LocalTalk To Ethernet

The Macintosh LAN Grows As Your Business Grows

BY MICHAEL ROBIN



In 1984, while running a small business in Atlanta, Georgia, Les Berkowitz decided to use the newly introduced Macintosh computer to help keep track of the operations. After looking at the IBM PC, Epson, and the Macintosh computers, he decided on the Mac because he "could do something with it the day he got it." In 1989, when Les and Terry Berkowitz opened Galisteo, a southwest art and furniture store in San Francisco, they had already decided on several things: They would continue to use Macintosh computers for operating the business, and the computers would be networked, primarily so they could use Point-of-Sale systems.

"Knowing that we were doing that and having been a subscriber to *MacUser* and *MacWorld* and receiving *MacWeek*, I felt that a network was the only thing that made any sense," said Les Berkowitz. "At the time we did this, we chose the SE/30 to be the file server (which is what's there now). We bought two Mac II's because we could put the CPUs under the counter. We bought extra cable from Kensington to have just the monitor and the keyboard on the counter. We went to that, over an SE/30, purposely because we didn't want the whole computer sitting on the counter."

MACINTOSH NETWORKS

A recent study published by the International Data Corp. (IDC) in July 1991 shows that Macintoshes are "more networked than personal computers. More than 65% of all business Macintoshes were connected to LAN's in 1990, while only 33% of business personal computers were LAN-attached." By 1995, the study predicts, almost three-quarters of all Macs will be networked.

The two main reasons networking has been so popular with Macintosh users are ease-of-use and cost. Unlike the PC, every Mac since the very first 128K Macintosh has come with LocalTalk built in. This networking scheme from Apple allowed Macs to be linked to each other using standard telephone-type wire, making it easy to send email and memos, transfer data, and share peripherals such as laser printers and plotters.

Connecting up to thirty-two devices, LocalTalk works at a transfer rate of 230 kilobits per second (kbs). Third-party accelerators, such as the Dayna DaynaTalk and TOPS FlashTalk connectors, could boost this rate up to 720kbs.

IMPLEMENTING A MACINTOSH NETWORK

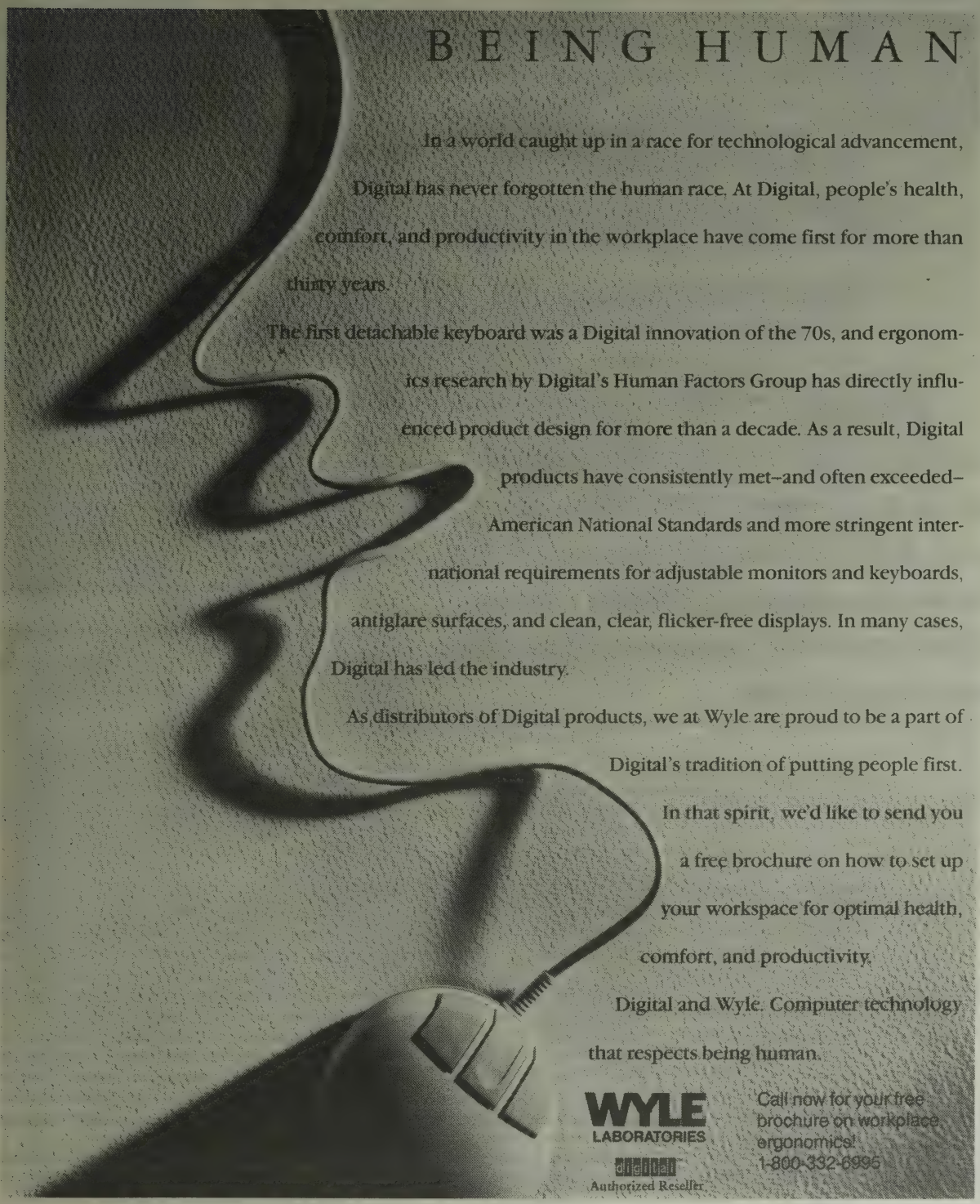
With this built-in networking capability, how did the Berkowitzes implement their LocalTalk network?

The network for Galisteo was designed before construction began at their new store at Division, near 10th St., in San Francisco. The building was wired for a LocalTalk network, set up with a node in every wall. They also had a custom application of 4th Dimension developed to keep track of the business on the network.

"We wrote the custom version of 4th Dimension to be point-of-sale," said Les. "You get a screen that tells you what you can do—you can enter a new client, a new order, enter inventory, enter a purchase order, or enter a new employee. Or you can view any of the ones already entered. Point-of-sale is how this all works together."

In addition to 4th Dimension, other business-related applications used at the store include Microsoft Word for word processing and updating price lists, Claris FileMaker Pro for printing labels from their large database, and PowerUp Calendar Maker to design calendars for the staff. Les also uses Microsoft Excel as his financial tool—spreadsheets and number crunching.

At the center of the network is an SE/30 with an 80MB hard disk (later upgraded to 100MB) working as the server, two Macintosh II's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in the store for point-of-sale operations, an SE and another Mac II (recently upgraded to a 40MHz fx) in the upstairs office. Les uses a Macintosh Portable with a Hayes 9600 baud modem when he is on the road.

They use several printers located throughout the building. One printer, an ImageWriter II is networked and used primarily to print checks. A LaserWriter NT is used for invoices and labels, and a second LaserWriter is connected directly to one of the computers in the store. Recently, a fourth printer, a CoStar Label Printer, was added to print tags for the furniture in the store. This printer is connected to a dedicated computer.

FROM LOCALTALK TO ETHERNET

"We planned the network when the building was built-out for us. Then we bought all the equipment and we set the network up. We used 4th Dimension 1. And everything was wonderful.

"It's a pretty sophisticated database, and its pretty big. We have 7351 clients—7351 different people have purchased in this store in three years. That makes the database fairly sizeable just by itself. We also generate mailing lists notifying our clients about sales, new merchandise coming in, and the two or three artist showings we do each year. On the LaserWriter, we print six to seven thousand labels and postcards probably once every other month." Now, three years later, Galisteo's database has grown to over 21MB and everything has become considerably slower.

Business was clearly good at Galisteo, and they decided to upgrade the system for speed. Again, after doing their research, Les and Terry decided that a 10BaseT Ethernet network made the most sense and chose the Asanté hub and cards.

Business was clearly good at Galisteo, and they decided to upgrade the system for speed. Again, after doing their research, Les and Terry decided that a 10BaseT Ethernet network made the most sense and chose the Asanté hub and cards.

After the Asanté Ethernet hub and cards were installed, they ran into an unexpected problem. "There was no one to wire it. It was not quite as simple as just plugging it in, because they don't sell anything that plugs in. It doesn't work like LocalTalk does." The wiring in the phone jacks wasn't the same twisted-pair wiring Ethernet required, and no one made the correct patch cord.

Working with the original electrician, who knew nothing about the patch cords, and Asanté, they figured out how to construct them. However, by then, Les and Terry decided to rewire the whole building, just for Ethernet. They ran "one wire to each location so there would be no splices or anything, just to keep the integrity. It took a day, maybe five hours of labor, it wasn't really that big of a deal, three or four hundred dollars and we rewired the whole thing separately for the Ethernet. Which has been working just wonderfully.

"Asanté's tech support was wonderful, very available. They did not have to call you back, or wait five hours for something to happen. They were there, they took the time. We got the network up and running and it's been flawless since it's been running. I've never had a crash on this system under Ethernet. It's just really solid and it's improved the overall performance of the network."

ETHERNET

Ethernet, developed at Xerox PARC during the 1970s, is the preferred network protocol in business and government. It has become the high-speed network alternative for the Macintosh, in part, because Apple has implemented its own version, called EtherTalk, which allows the Mac to communicate with other computers on an Ethernet network.

Computers on Ethernet communicate on a "transmit-at-will" basis using a method called CSMA/CD (carrier sense multiple access/collision detection). What this means is that only one computer can speak, or transmit, on the network at any one time. In the event two computers start talking at once, one must stop, wait, and try again later.

Ethernet networks come in three types: 10Base5, 10Base2, and 10BaseT, which respectively support three kinds of cabling: thick, thin, and unshielded twisted-pair. In all three designs, the 10 represents a transmission rate of 10Mbits per second (vs. the 230kbs for LocalTalk, or up to fifteen times faster). Base refers to a bandbase transmission that carries a single signal on a cable (as opposed to broadband that carries multiple signals). The 5 and 2 tell you the maximum distance the signal can be carried, five hundred meters and two hundred meters, respectively. However, the T describes the type of cable—unshielded twisted-pair.

Each has its strengths and weaknesses, and represents successive changes in the development of Ethernet standards and technology. Thick cabling, 10Base5, is the oldest and most costly of the three. Durable half-inch cable is often difficult to install. Typically, thick Ethernet is installed through ceilings, with connections dropped from transceivers to each computer. Its main advantage is that it can be extended up to 1640 feet per segment—enough to connect two widely separated departments.

Thin-wire Ethernet, or 10Base2, was developed to resolve the high expenses and difficulties associated with 10Base5. This thin coaxial cable is similar to the wiring for cable television—only about a quarter inch in width—and can more easily be installed throughout a business site.

Accompanying thin, less expensive, easier to install Ethernet cabling, was an increased vulnerability to failure. Wilson Wong, president of Asanté, explains that "unlike thick, which uses a drop cable to each computer, thin cable is daisy-chained directly to the computer using T-connectors. Like the Christmas lights of old, if a node fails or is transmitting continually, the chain breaks and the entire network shuts down."

Twisted-pair Ethernet, called 10BaseT, is the most recent development in the Ethernet evolution and represents an important leap in networking technology. Because 10BaseT uses regular twisted-pair telephone wire, it brings the cost of networking down even further. It's also simple to install because it uses the same RJ-45 jacks as your telephone system.

According to Wong, "the big advantage of 10BaseT is its reliability. Part of the reason is the way a 10BaseT network is configured. Unlike thick and thin networks, which are arranged in a linear or bus configuration, 10BaseT networks are arranged in a star configuration, in which network nodes are connected like spokes in a wheel.

"A star configuration is more reliable because each spoke is isolated and can't affect the other nodes if it runs into trouble. The star configuration is pure heaven to any network manager who has ever

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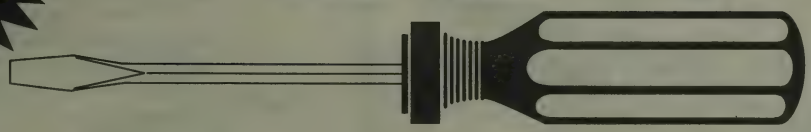

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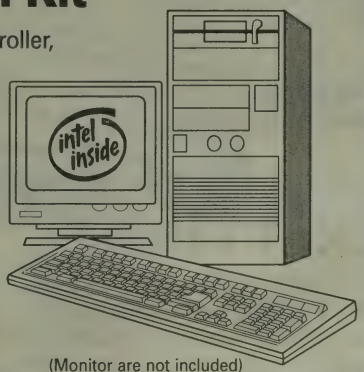

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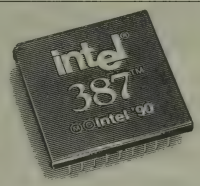

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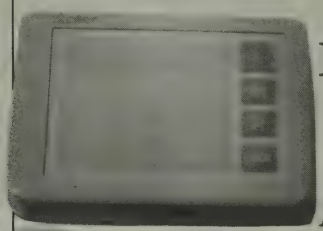

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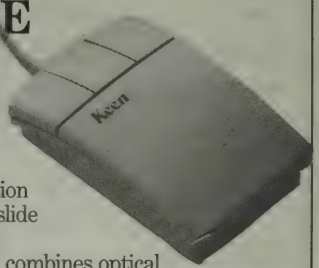

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had an entire network shut down because a cable was accidently cut or disconnected.

"The 10BaseT specifications take advantage of a star configuration by including an auto-partition feature that automatically shuts down a node when it detects jamming conditions from a continuously transmitting network node. It then periodically checks that port and restores it when the jamming conditions have stopped.

REMOTE ACCESS AND EMAIL

As the business has grown, Les and Terry spend an increasing amount of time on the road. "Our stuff is not much the kind of stuff you pick up the phone and order," Les explained. "There is some of that. But a lot of it is relics, vintage stuff. You've just got to get out on the road and find it. We take motor home trips. Spend two or three weeks just wandering around the Southwest."

When he is not in the store—either from the road, or from home just to check in to the store—Les uses his Macintosh Portable, an external 9600 baud Hayes modem, Timbuktu Remote, and White Knight telecommunications software. He chose to carry around the external modem because there are no 9600 baud internal modems for the Mac, only the 2400. In the store is a dedicated line for a matching Hayes modem that is always running.

Being away from the store so much, Les needed a convenient way to retrieve his messages electronically. It has to be as easy for everyone at the store to send him messages, as it would be for him to read them. He decided to combine the capabilities of Microsoft Mail with Timbuktu Remote.

When Les dials into the store and logs onto his computer he can go to Microsoft Mail to read his messages. "I tell them, 'Don't put messages on a pad while I'm gone for three weeks. What am I going to do with fifteen pages of messages? Put all my messages in email.' So each night I just log on and see if there's anything there. I use that because it's a local call for people at the store. So they log on and just type it in. I can come on at night and get it. I don't have them call out through the modem to CompuServe to leave me an email message. I call into the store every night, its simpler to use in-house email "

A NETWORK THAT GROWS WITH YOUR BUSINESS

By building the capabilities into the Macintosh from the very beginning, networks have been popular, simple to use, and inexpensive for Mac users. LocalTalk offered plug-and-play convenience that required no major additional hardware or software. However, the experiences of Les Berkowitz at Galisteo illustrate that as businesses grow, LocalTalk may become insufficient. The amount and type of data sent across a network continues to grow—memos, database records, spreadsheets, full-color graphics, email, and even voice email. Along with this, businesses will need greater speed to be able to sort and retrieve information about customers, inventory, outstanding debts and credits, and employees. The selection of Asanté Ethernet hub and cards provided Galisteo an upgrade path that delivered the speed, ease-of-installation, and cost saving required by a growing business. ■

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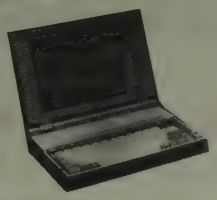

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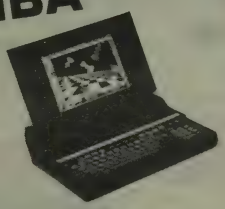

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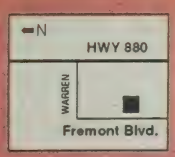

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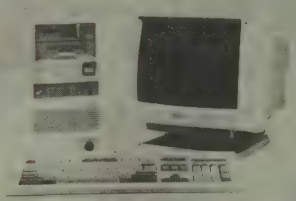

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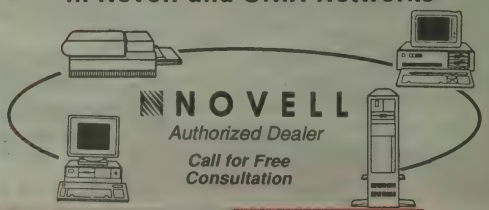

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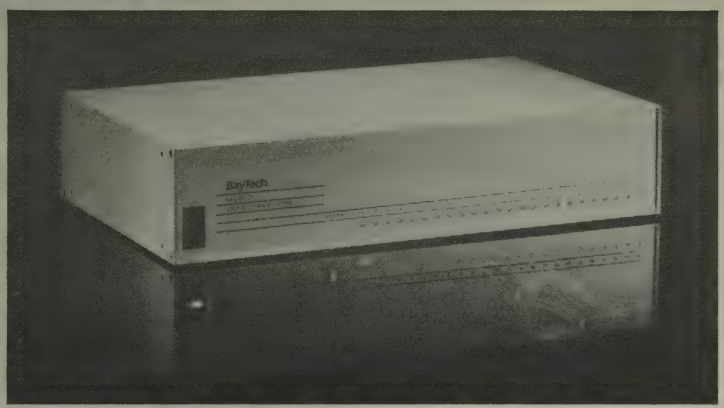
Printer-Sharing Options

Sharing Peripherals Offers A Low-Cost, LAN-Like Solution For Businesses And Workgroups

BY MARV DOWNEY

Many full-featured LANs have been installed in small businesses to solve a simple problem—the desire to share a printer. However, the cost and complexity of most network wares does not make this an easy solution. Printer sharing is a LAN-like need that is often better solved through less complicated methods. Even today, with so many sub-$1000 laser printers, it can be easier and more productive to share one, fast, full-featured printer in an office, rather than many less capable ones.

Traditionally, a simple mechanical printer switchbox (often called an A/B switchbox) was used to allow two computers to share one printer. A cable runs from each computer's parallel printer port to a connection on the switchbox, with a third cable connecting the switchbox to the printer. A dial or pushbutton switch is then used to select manually which computer will have access to that printer. While this works well with dot matrix and daisy wheel printers, it can cause problems with laser printers. Turning the switch, especially during printing or font downloading, can send damaging power surges through the cable to the printer. Hewlett-Packard and other laser printer manufacturers recommend the newer automatic printer sharing devices.



BayTech Model 24

PRINTER SHARING BASICS

Unlike their mechanical counterparts, these switchboxes do not require the user to choose which PC is able to use the printer. The device contains a microprocessor and programmed chips that allow it to scan the computers in a continuous, sequential order. When it senses data coming from one computer, it temporarily suspends scanning and passes the data through to the printer. After a predetermined amount of time (usually at least ten seconds) during which no data comes from the computer, it will resume scanning.

The range of appliances in this category has expanded dramatically over the last few years. A simple two-computer-to-one-printer automatic peripheral sharing box costs under $100 with cables. More elaborate four-PC-to-one-printer devices are about $150, and the eight-to-one style about $250. They are available in either parallel or serial (RS-232) port versions. Parallel is recommended for speed (usually at least five times faster than serial). On the other hand, serial is used when the distance between the computer and printer sharing device exceeds the recommended maximum 20' to 30' for parallel port versions. In practice, many parallel sharing devices will work up to 50' from the computer with well-shielded cable, and another 12' from the box to the printer. Some newer designs even extend the possible distance to 150' for parallel devices. There are numerous vendors of these types of switches. A highly recommended local cable provider is DIA, Inc. of San Francisco. At a cost per workstation of $35 to $50, this is a low-cost, low-maintenance solution to one LAN-like problem.

Audino & Associates, a San Francisco-based real estate appraisal and consulting firm, has taken a LAN-like path for sharing printers. They use a set of programs from Dynamic Computing, a Berkeley software firm specializing in applications for real estate appraisers. The programs allow the appraisers to fill out the residential appraisal forms used for homes, condos, and small apartment buildings. The multipage, legal size forms are generated on any Hewlett-Packard or compatible laser printer.

Because these programs demand little sophistication from a laser printer, Audino decided to use many less-expensive HP LaserJet IIP printers and disperse them throughout the office. This gives them excellent redundancy; if one printer develops problems, the others can share the workload. Their San Francisco office now has three different workgroup clusters, each consisting of three to four computers sharing one laser printer with inexpensive four-to-one automatic parallel switches. Office manager Tina Salvo credits this arrangement with dramatically increased output from their appraisers. "It's a better setup than a faster single laser, both for total reports produced and more efficient office foot traffic."

One alternative to contention for a single printer in small workgroup clusters is using a multiple-computer-to-two-printer peripheral sharing device. Two computers to two printers, four to two, and eight to two are the most common sizes. The additional printer port only adds between $50 to $75 to the price. They work the same and can pass two print jobs from two different computers through to the different printers, simultaneously. The device will send the data to the first available printer. Many of these boxes also come with a RAM resident pop-up utility that runs on each com-

RESOURCES:

Buffalo SL
Buffalo Products
2805 19th St.
Salem, OR 97302
800-345-2356
(503)585-3414

Model 24 Data Exchange System
BayTech
P.O. Box 387
200 N. Second St.
Bay Saint Louis, MS 39520
800-523-2702
(601)467-8231

DIA Cable Inc.
870 Market St.,
Ste. 314
San Francisco, CA 94102
(415)392-4614

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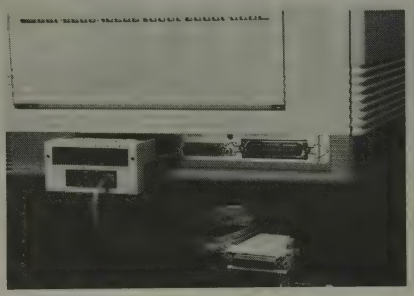
Printer SENSIBLE SHARING SOLUTIONS



JetCard
- Up to 10 users share HP LaserJet III, IIID, II, IID
- Plugs into "Optional I/O" slot
- 256 KB buffer upgradeable to 1 MB

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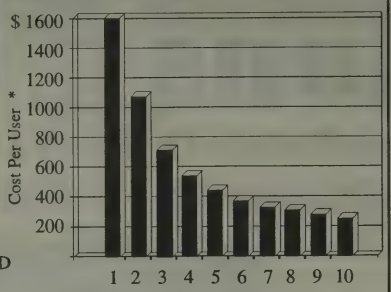
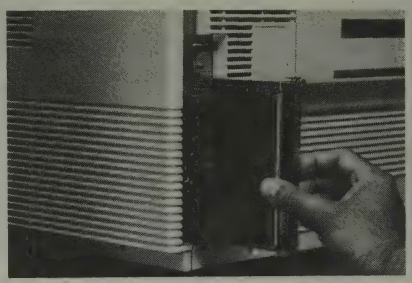
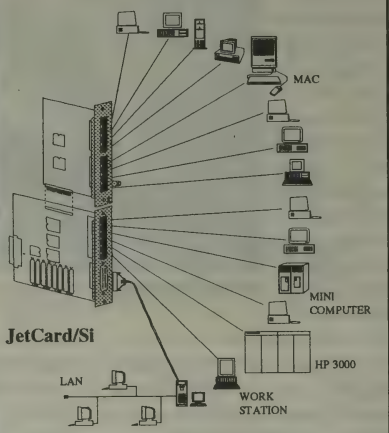
See for yourself, why printer sharing makes sense to thousands of our world wide customers.



* Cost based on HP LaserJet III at $1,600.00 plus cost of JetCard and accessories.

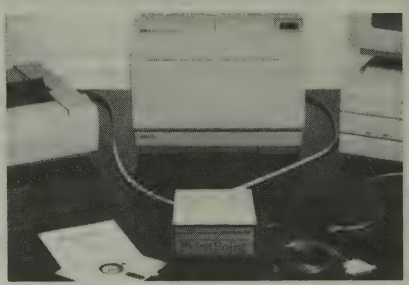


JetCard/Si
- Up to 15 users share HP LaserJet IIISi
- Plugs into modular I/O (MIO) slot
- 1 MB buffer upgradeable to 4 MB



JetCard/Si

Printer sharing is easy, from any computer.



PrintPoint
- Up to 10 users share any 2 parallel printers
- Compact, stand alone desk top models
- 256 KB buffer upgradeable to 1 MB

"Excellink's PrintPoint ... offers what is arguably the simplest possible approach to printer sharing. You won't find a complicated set up procedure.... You will find spartan simplicity and generally top flight test scores."

PC MAGAZINE

- M. David Stone, *Editor*
PC Magazine, April 30, 1991

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puter. This allows the user to select the desired printer immediately before printing.

BETTER SHARING

The next level of peripheral sharing device adds memory and additional intelligence to the switchbox. These devices usually have several connections that can be used either for printers or computers. A setup program that you run on one of the computers tells the box what type of device is attached where.

A good example is the Buffalo SL from Buffalo Products. The SL comes in two versions; one has four parallel and six serial connectors, the other has two parallel and eight serial. Any of the ports can be used either for input from a computer or output to a printer. Thus you could have eight computers and two parallel printers, seven computers and three printers, etc. Pop-up software allows each user to either select a specific printer or use the next one available. If the selected printer is not available, the memory is used to store print data until it is. The box handles translating incoming serial data to outgoing parallel printers or incoming parallel data to outgoing serial printers. If your needs expand beyond the ten available connections, you can cascade additional SL's, using one parallel port on each to provide the box-to-box link.

The SL has been in constant use for over a year at Yovino-Young, Inc., a real estate appraisal and consulting firm in Berkeley. Originally, they had a dot matrix printer and a mechanical two-to-one switch, then upgraded to laser. Their laser printer predates the inexpensive models, and to maximize their investment they decided to share it among seven computers. According to company Vice President Alison Teeman, it has paid off not only in user convenience, but improved product quality. "When we had only one computer attached to the laser and everyone had to contend for its use in order to print, people would sometimes allow minor typographical errors to go uncorrected. Now, since everyone can print from their own computer, these mistakes are easily rectified." Since most of the appraisers find it much easier to proofread reports from hard copy, rather than on the screen, enabling them to print anytime has greatly enhanced the quality of their reports.

SHARING IN A GROWING OFFICE

Another device like the Buffalo SL is the

IQ ENGINEERING: FONT TECHNOLOGY LEADERS.

IQ Engineering was the first company to design and manufacture a multi-font cartridge for HP printers. From their first font cartridge--the Super Cartridge 1--to their latest product offerings, the Silicon Valley firm continues to lead the market in HP printer enhancements. Super Cartridges are now available for every HP LaserJet printer model and for the DeskJet Plus & 500.

IQ Engineering's Super Cartridge products combine quality, performance, and broad font selection. IQE's engineers "hand-tune" each font in order to produce the highest quality characters possible.

"The final test of a font product must be based on the quality of the printed output," said IQE president Michael Gardner. "This is our first goal at IQ Engineering."

This commitment to font quality has earned IQ Engineering accolades from numerous industry critics. Super Cartridge fonts have been awarded two "Best of" awards and a prestigious "Editor's Choice" from PC Magazine.

IQ Engineering's technical innovation continues. They are now marketing a new scalable font cartridge for HP LaserJet III printers. This new cartridge, the Super Cartridge 3/Professional Edition, offers LaserJet III users who are looking for PostScript, a better alternative than a cumbersome emulation cartridge.

The Super Cartridge 3 provides equivalents for the 35 typefaces made popular by PostScript printers--such as Palatino, Avant Garde and Dingbats--plus 15 other type styles. These IQ Engineering typefaces include a version of Garamond Old Style, decorative faces like the medieval English Blackletter and Modern Gothic (similar to Diet Pepsi's logo) and several fixed-width fonts for spreadsheets. And keeping with tradition, IQE's font design is excellent.

If you're looking for PostScript--look first at the Super Cartridge 3...It's a better option for the LaserJet III.

With the Super Cartridge 3 users can access over 40 symbol sets, more than any other scalable font cartridge, for foreign language, math and scientific uses.

Unlike PostScript cartridges for the LaserJet III, Super Cartridge 3 typefaces use HP's own PCL-5, so no conversion from PostScript to PCL language is needed when printing. This means that documents containing IQE's PostScript look-alike typefaces print up to 2.5 times faster than equivalent PostScript faces do on either LaserJet III with an emulator, or on a PostScript printer. This speed factor can be critical for printers on a network or printer sharing device where soft font downloading is unreliable and PostScript lengthens the wait in the print queue.

The Super Cartridge 3 uses the printer's own font-scaling and resolution enhancement feature for fast, 300 dpi printing. It also works well with the LaserJet III's original hardware configuration and can function with all of its resident fonts. Since no language conversion is necessary, the Super Cartridge 3 doesn't require any extra printer RAM or an expensive accelerator board to print.

IQ Engineering supplies HP-standard autofont files that let users install the Super Cartridge 3 automatically in WordPerfect, WordStar, Windows, Microsoft Word and others. Font drivers are provided for Lotus 1-2-3 and Ventura Publisher. Free screen fonts are available for Windows and Ventura.

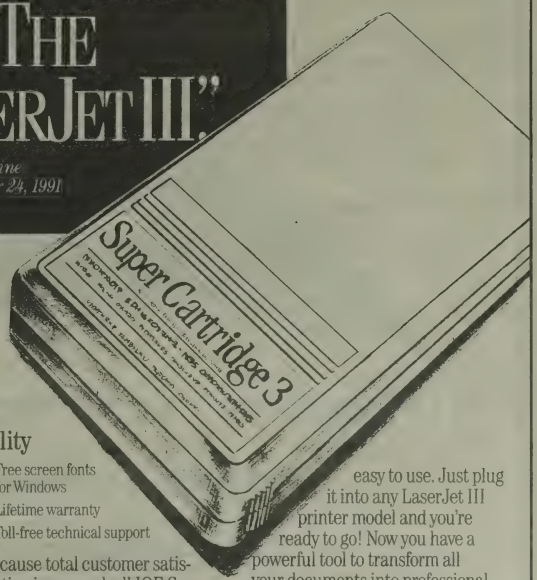
The Super Cartridge 3, like all IQ Engineering products, comes with a 30-day money back guarantee, a lifetime warranty, and toll-free technical support.

If you're looking for PostScript--look first at the Super Cartridge 3 from IQ Engineering. It's a better option for the LaserJet III. ■

IQ Engineering:
685 N. Pastoria Avenue; Sunnyvale, CA 94086
800/765-3668 or 408/733-1161; Fax: 408/733-2585.

"THE BEST SCALABLE CARTRIDGE FOR THE HP LASERJET III."

PC Magazine
September 24, 1991



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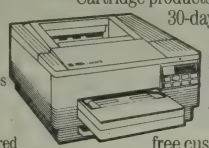
- Free screen fonts for Windows
- Lifetime warranty
- Toll-free technical support



Because total customer satisfaction is our goal, all IQE Super Cartridge products come with a 30-day money-back guarantee...so you'll be certain it's right for you! And only IQE includes toll-free customer support and a lifetime warranty.

Best of all, the Super Cartridge 3/*Professional Edition* is easy to use. Just plug it into any LaserJet III printer model and you're ready to go! Now you have a powerful tool to transform all your documents into professional statements.

Call now for your Super Cartridge 3 discount and find out why PC Magazine says it's "...the only [font cartridge] you'll ever need for the LaserJet III." *PC Magazine*, 2/12/91

Super Cartridge™

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WINNERS CIRCLE SYSTEMS
2618 Telegraph Ave., Berkeley, CA 94704
Tel: 510/845-4814 FAX: 510/845-2400

Model 24 Data Exchange System, from BayTech, Inc. Like the SL, it comes standard with pop-up software and 512K of RAM, expandable to 4MB. Unlike with the SL, you can order a custom configuration of up to twenty-four parallel and/or serial connections. The connections come on small, four-port expansion boards that plug into the main board of the box. This makes it easier to start small and add connections as needed. The boards come with either four serial or two serial and two parallel ports.

The Hanford/Healy Companies, a real estate appraisal, consulting, and asset management firm based in San Francisco, uses several different types of peripheral sharing devices. They started with a single laser printer shared between two clerical computers by moving the cable from one to the other. This was soon replaced by a Buffalo SL with six computers sharing one laser printer. The next round of expansion brought twelve computers and another SL cascaded onto the first. With so much growth and almost constant use of all the computers, they began to run into performance limitations.

A BayTech Model 24 was installed to allow for easier port expansion and greater maximum buffer memory. They now have twenty-one computers and three HP LaserJet III printers attached to the Model 24, and an additional six computers to a single LaserJet III workgroup cluster using an inexpensive, non-buffered, eight-to-one automatic parallel switch device. The setup sometimes caused frustration as output intended for one printer appeared on another. Gradually, fine tuning eliminated most of this problem, and they are now quite satisfied with the configuration.

SOME ADDITIONAL FEATURES

Both the Buffalo SL and the BayTech Model 24 devices also allow computer-to-computer communication for file transfer. This is not the type of file sharing most people want from a LAN-like product. For example, you cannot call up a file on another PC using the WordPerfect List Files menu. Instead, both computers must run a file transfer program to move data from one to the other. While this can be useful for larger files, for daily use it is rarely better than a sneakernet (copy the file to a floppy and hand deliver it).

Both of these products, and others like them, allow you also to share a modem. Many offices need only occasional use of a modem from any individual workstation. Though good modems are cheap, installing one in each computer leads to the expense and frustration of also installing additional dedicated phone lines.

With cable and installation, modem sharing devices generally fall in the $100 to $175 per workstation range. This is still a very cost-effective solution, allowing fuller utilization of available resources.

Other products can be employed to work in tandem with automatic peripheral sharing devices. For example, a standalone printer buffer can have memory capacities usually between 32K and 512K. They work well with programs like Lotus 1-2-3 that don't have print spooling (also called background printing). You can install the buffer between the printer and the connection to a smaller automatic peripheral sharing box. This gives you the buffering advantage of the larger boxes at about half the price.

One detail to also pay attention to is the timeout period used by a peripheral sharing

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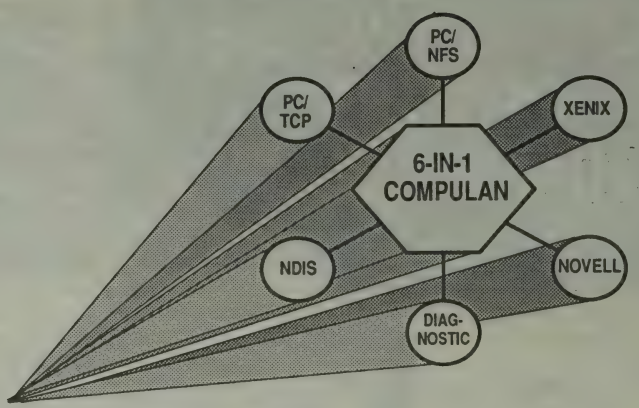

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88MB, MFM, SEAGATE (SWIFT) ST-1100, 3.5, 15ms	619
89MB, IDE, SEAGATE ST-1102A, 3.5, 19ms	289
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MS DOS 3.3 w/GW Basic, OEM Version	47
MS DOS 3.3, Actual Microsoft	68
MS DOS 4.01 w/GM Basic, OEM Version Slim	68
MS DOS 4.01, Actual Microsoft Slim	82
MSDOS 5.0/OEM MS DOS 5.0	77/49
DR DOS 5.0	36

I/O & MULTIFUNCTION

XT-SERIAL Card, 2 Ports, 2nd Port Opt. COM 1 & 2	10
XT-SERIAL Card, 2 Ports, 2nd Port Opt. COM 1-4	13
XT-SERIAL Card, 4 Ports, COM 1-4, 2 Ports Install	61
XT-2nd SERIAL Port Chip & Cable Set	5
I/O PLUS Clk, Cal, Par, Se, Game, 2nd Serial Opt	35
CLOCK Card, Calendar and clock only, fits into a slot	9
CLOCK Slotless, no-slot clock: fits in a prom socket	29
384K MULTI I/O w/Floppy Controller:Clk, Cal, Par, Ser, Game	55
SUPER MULTI I/O w/Floppy Ctlr - 360K, 720K, 1.2MB and 1.4MB FDD: Cal, Clk, Par, Ser, Game	42
XT/AT PARALLEL PRINTER Port, Sets to LPT 1 only	8
XT/AT PARALLEL PRINTER Port, Sets to LPT1, 2, or 3	9
XT/AT GAME CARD, 2 Ports	8
AT SERIAL Card, 2 Ports, 2nd Port Opt. COM 1-4	15
AT SERIAL Card, 4 Ports Installed, COM 1-8	66
2nd SERIAL Port Chip & Cable Set	7
AT I/O #1, 1 Ser, 1 Para, 1 Game, COM 1-4/LPT 1-2	11
AT I/O #3, 2 Ser, 1 Para, 1 Game, COM 1-4/LPT 1-2	13
AT I/O #4, 2 Ser, 2 Para, COM 1-2/LPT 1-3	22

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XT-384K MULTI I/O CARD, 0K, 1 Ser, 1 Par, 1 Game, Cal, Clk	54
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XT/AT FDC+, Controls 360K/720K/1.2MB/1.44MB	19
XT/AT, SUPER FDC+, 4 Drives, All Types	26
XT/AT, COMPATICARD II, Co exist, 2 Drives, All Types	69
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XT, MFM WD XT GEN Clone	34
XT, RLL, DTC 5150	52
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XT, LONGSHINE 6220, 8 Bit, 2 Floppy/2 Hard Dr.	64
AT, IDE, AT BUS, Hard/Floppy, 2 Serial, 1 Parallel	18
AT, IDE, AT BUS, Hard/Floppy, 2 Serial, 1 Parallel	24
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AT, MFM, DTC 7280, 16 Bit, 1:1, 2 Hard/2 Floppy Dr	56
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ULTRASTORE ULTRA 12F ESDI Controller, 1:1, Cache on Board Co-exist with other Controllers, Allows Disk Duplexing, Novell NETWARE 386 Compatible, Controls Floppy Drive, 32K Cache	153
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AMS 1100 SR4, RLL, Controls 4 Floppy/2 Hard Dr	62

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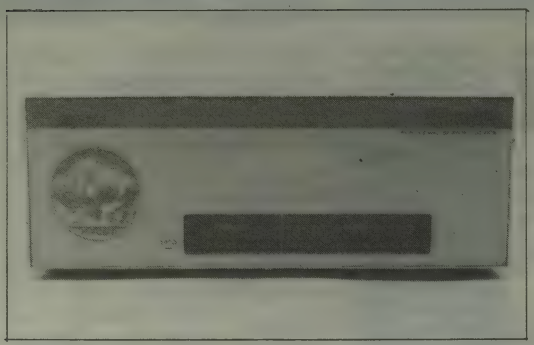

Buffalo SL

device. This is the number of seconds of no transmitted data that the device will interpret as the end of a print job. The smaller devices sometimes have this timeout preset at ten or twenty seconds. The larger ones usually allow you to set it between ten to sixty seconds, in ten-second increments, either by switches or through setup software. WordPerfect 5.1 is one of the programs that can have timeouts in a single print job that are longer than ten seconds, especially with complex pages as it assembles them in the computer's memory (tables or graphics). A box with a fixed short timeout period would begin your print job but then assume the first ten-second gap in data to be the end. It would resume scanning, opening the possibility of a print job sent from another computer appearing in the middle of yours.

This is a problem all too familiar to the employees at Hanford/Healy. As newer WordPerfect upgrades have allowed them to produce even more complex pages, they have had the timeout setting on their Model 24 gradually increased—but only after many frustrating printout mistakes.

INSTALLATION

It is easy to underestimate the cost and work involved in cabling for these devices. It is a feature that some will describe (incorrectly) as a potential benefit and others will completely ignore.

On the positive side, most serial connections can be reliably achieved through either flat or twisted pair telephone style cable. Standard RJ-11 connectors are crimped onto both ends of the cable, then plugged into connectors that have the RJ-11 receptacle on one side and a nine- or twenty-five-pin serial connector on the other. This makes the cable itself much cheaper and easier to run around or through walls, floors, and ceilings.

However, unless you are or have inexpensive access to an experienced telephone installation person, your own foray into the depths of the wiring in your walls will rarely turn up an advisable, workable solution.

Parallel cable is always much thicker (and more difficult to install) than serial cable. Beware of the many "parallel extender" products that claim to extend your parallel connections up to 1000'. What they really do is convert your parallel signal to a slower serial signal, send it down the wire, and then reconvert it on the other end. Thus you sacrifice the speed of parallel.

In any event, the cable and installation labor can often be a large part of the total cost for any of these products.

Any of these devices can go a long way toward making the small-business computing environment more productive and convenient. They are all well within small-business budgets, and none require the level of knowledge that usually inhibits the installation of full-featured network products. In this fashion, LAN-like peripheral sharing devices often provide a simple and appropriate solution for more effectively using all of the computer-related equipment in your office. ■

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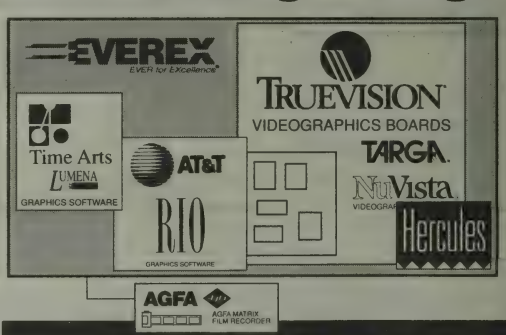

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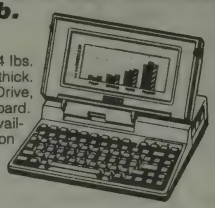

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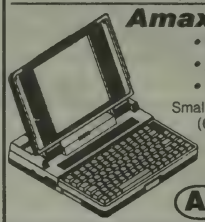

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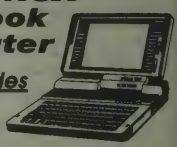
Chaplet 386-sx20

- 60 MB Hard Drive
- 2 MB RAM
- 1.44Mb Floppy

This powerful 386-SX20 has 2Mb RAM, 1.44Mb floppy drive, 60Mb hard drive, VGA screen, & weighs only 6.6 lbs. with battery. Packaged with MS-DOS, external AC power adaptor, and carrying bag. Options include MS-Works, 1, 2 or 4 MB memory board, expansion units, & much more!

$115 Month $2299

Altima NSX Notebook Computer

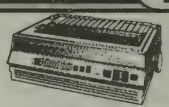


The Mercedes Benz of Notebooks

Powered by a 386SX processor, this PC has built-in send fax, and an extra large screen and keyboard. 2 MB RAM, expandable to 8 MB, a 20 MB hard drive, battery pack, DOS and ports, inputs, connectors and outputs.

$125 Month $2499

MONITORS, PRINTERS and ACCESSORIES



Near Letter Quality Printer

Here's a great buy on our most popular printer. Delivers excellent "near letter quality" print, and zooms along at 192 cps in the draft mode. Incudes automatic tractor feed with paper parking and self loading.

Panasonic Office Automation

$148

2 Year Warranty!

CITIZEN 24 WIRE DOT MATRIX PRINTER

The Citizen GSX-130 has all the features you expect in a top-quality dot matrix printer including 180 cps, 10k memory upgrade to 32k, 4 resident fonts and optional color upgrade. With 1 year parts and labor warranty, its a great deal.

CITIZEN™ $269

CITIZEN PORTABLE NOTEBOOK SIZE PRINTER

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Canon Super Bubble Jet Printer

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(on desktop systems)

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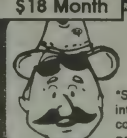

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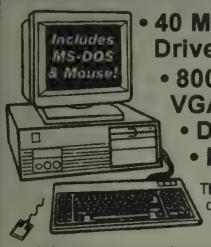
Mylex 386-sx System

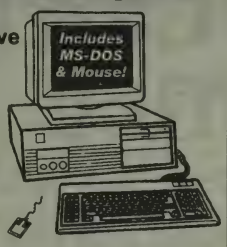


- 40 Mb Hard Drive
- 800x600 VGA Card
- DOS
- Mouse

This computer is so quiet you can hardly tell that it's on, but it still has enough power to run today's power hungry programs. System includes DOS, 40 Mb hard drive, floppy drive, parallel, 2 serial ports, and 800 x 600 VGA video card. Monitor Extra

Includes MS-DOS & Mouse! $999
$50 Month

Omni 386-33MHz System

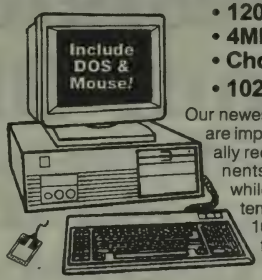


- 52Mb Hard Drive
- VGA Card and Mono Monitor
- 3.5" or 5.25" Floppy Drive
- MS-DOS
- Mouse

Another super computer from Uncle Ralph's! With enough power to run today's power hungry programs, this system includes DOS, 52 Mb hard drive, floppy drive, parallel, 2 serial ports, VGA video card and monitor.

$75 Month $1499

Uncle Ralph's386-33MHz

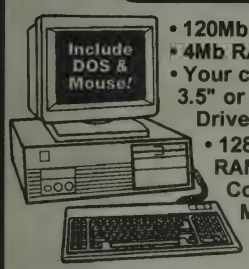


- 120Mb Hard Drive
- 4Mb RAM
- Choice of Floppy Drives
- 1024 x 768 VGA Monitor

Our newest 386 is so fast that even we are impressed. It's new design actually reduces the number of components and power consumption while increasing reliability. System includes 120Mb hard drive, 1024x768 VGA card and monitor, parallel and 2 serial ports, 4Mb RAM and MS-DOS and Mouse.

Includes MS-DOS & Mouse! $1999
$100 Month

Uncle Ralph's 486-33 MHz Systems!

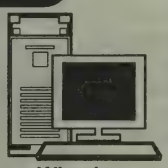


- 120Mb Hard Drive
- 4Mb RAM
- Your choice of 3.5" or 5.25" Floppy Drive
- 128k Static RAM • Includes Color VGA Monitor and Card

An extremely powerful 486-33 system designed to exacting standards and loaded with features! Includes 120Mb hard drive, 4Mb of RAM, floppy drive of your choice and 128K of static RAM!

INCLUDES MONITOR!! $120 Month $2499

Our Most Unique Powerhouse System

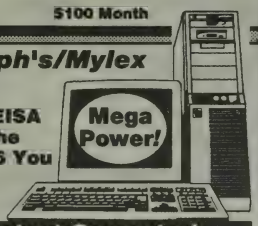


- 12 Slot Full Tower on Wheels
- 12 Bus Slot Motherboard
- Nine 5¼" Half-Height Drive Bays
- 370 Watt Power Supply
- 200Mb Hard Drive
- 4Mb RAM Expandable to 48Mb
- Color VGA Monitor
- MS-DOS • Mouse • & Much More!

INCLUDES MONITOR!! $165 Month $3199

Uncle Ralph's/Mylex 486-33

Burst Mode EISA Makes this the *FASTEST* 486 You can Buy!



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- 1024 x 768 VGA Card and MONITOR!
- Tower Case
- 101 Keyboard
- 1 Parallel and 2 Serial port
- MS-DOS
- Mouse

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$230 Month

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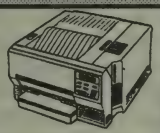

Packard Bell Laser Printer

With 1.5 MB of RAM and 8 resident fonts, this full page 300 DPI laser printer is a high quality workhorse with excellent output.

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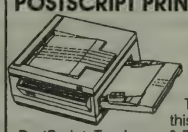
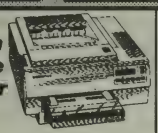
MICROTEK *TrueLaser* POSTSCRIPT PRINTER



This printer is fast, flexible and simple to use. Bundled with 35 resident TrueType fonts, this printer is fully PostScript, TrueImage & PCL compatible. 3 MB RAM, upgradeable to 6, it has interface switching and a 1 year warranty & 6 months on-site service guarantee.

MICROTEK $1399

Brother High Performance Laser Printer



Wow is this thing loaded! 12 resident scalable fonts, 24 bitmapped fonts, 1 Mb of RAM, expandable to 5Mb, 32 bit processor, great 8 ppm speed, and it prints on transparencies, label sheets and envelopes!

brother. $1599
$75 Month

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MiniMicro 14" 640 x 480 VGA Color $269
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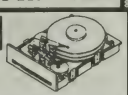
HARD DRIVES!



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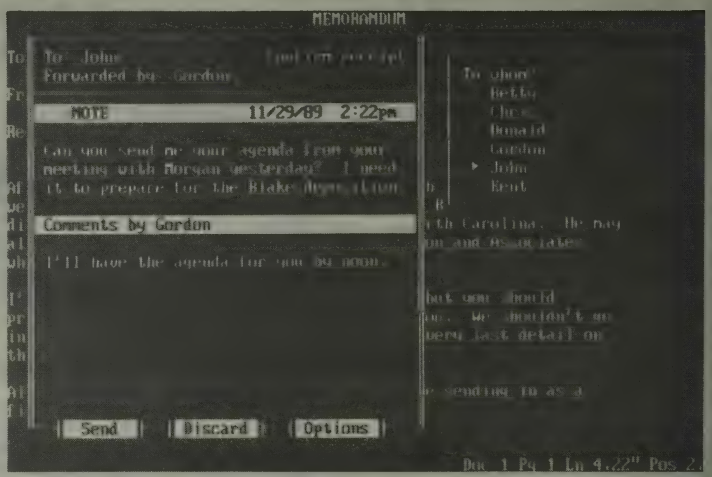
Email And Forms Design Can Change Your Office

This Encino-Based Accounting Firm Uses Electronic Mail And Forms To Increase Its Efficiency And Communications

BY ADRIAN STERN WITH TERI KALDHUSDAL AND CARRIE STEGER

The introduction of personal computers and local area networks (LANs) into the business workplace has made substantial changes in how offices function. Our accounting firm has gone to substantial lengths to harness this new computer capability. Every individual in the office is wired into a Novell network system that provides access to extensive amounts of software and data. Two of the most dramatic applications our firm is employing are electronic mail (email) and form design software.


MEMORANDUM
To: John
Forwarded by: Gordon
NOTE 11/29/89 2:22pm
Can you send me your agenda from your meeting with Morgan yesterday? I need it to prepare for the Blake negotiation
Comments by Gordon
I'll have the agenda for you by noon.
Send
Discard
Options
Ln 4.22" Pos 2.

USING EMAIL

Email is the generic term used for an electronic mail software system for networks. Most email packages offer a wide range of basic and advanced features. The primary purpose of the program is to provide for message transfer, message notification, and file transfer. While the additional features are nice, our main use of the email program is the message transferring capabilities. We are using a package called Notework by Notework Corp.

Hardware requirements for an email package should be as forgiving as possible, allowing the software to run on as many machine and monitor combinations as possible. For example, Notework runs on *any* PC, from the original 8088 chip to a 486 processor, and can use the original PC monochrome display up to a Super VGA monitor. An email package should be memory-resident. This enables you to pop up the program while in another application. In addition, it should use as little RAM as possible—5 to 10K is common.

From the administrator's point of view, email is perhaps the best development in the computer world. Since menus can generally be customized for each user on an individual basis, each person's menu can be arranged in a way that allows them to contact the people they need to most frequently using only a few keystrokes. This is a great time saver for anyone who has ever searched for a piece of paper, then a pencil, written the note, and finally delivered it to the recipient—only to have the recipient come to you and ask you to decipher the note.

A "receptionist" feature of the program is an absolute necessity for the people answering the phones and taking the messages. If someone is outside the office and calls in to check their messages, it is essential for the receptionist to be able to retrieve those messages. The receptionist feature of Notework allows the receptionist to retrieve messages without leaving their workstation. Without this, the receptionist would have to go to the recipient's terminal to access the messages.

Advantages of using email are numerous. In our office, the ability to flash anyone in the office with a PC on their desk and inform them of a caller, visitor, or other message is definitely a time saver and allows for substantially greater productivity. Using Notework, not only can you be contacted, but you can also respond with the flash feature. Email also prevents the situation of someone standing at your door with an urgent message or question while you are on the phone trying to concentrate on the business at hand. We bill our clients by the hour and are especially cognizant of using our time wisely. Handling multiple telephone calls with email is a great time saver for our firm and clients.

Another great feature of email is the ability to take and receive detailed electronic messages. Since computers are the office norm rather than the exception today, most people are able to type with accuracy and speed. An additional benefit from messages that are

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Disk Drives:
- 1.44MB, 3.5" diskette drive
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- Five full-sized 16-bit ISA compatible slots (one taken by the graphics controller)

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- 4MB RAM (expandable to 16MB on processor board; 80MB system total)

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  - On 8-bit slot
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- VGA Video
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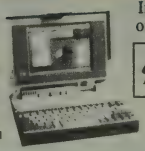

In Stock on Demo

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- 386SX/20 MHz
- VGA with 32 gray shades
- 2MB RAM
- 20/40/60MB Hard Drive

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AST Premium® Exec™ 386SX/25

New Arrival

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- 4MB RAM expandable to 8MB
- 1.44MB Floppy Drive
- 80MB Hard Drive
- VGA output 32 shades
- DOS 5.0
- 1 Serial/1 Parallel port

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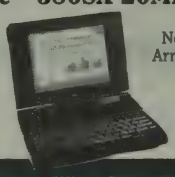
NEC UltraLite™ 386SX-20MHz



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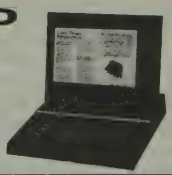
- Standard 386SX-20MHz
- 40/60MB Hard Drive
- VGA-16 levels of grey
- Parallel/Serial/VGA/SCSI ports (New)
- Standard with Microsoft Windows 3.0
- 6.4 lbs.

NEC UltraLite™ 286F

In Stock On Demo

- 80C286/12MHz
- 1MB RAM, exp. to 2 or 5MB
- 20MB Hard Disk Drive
- Internal 3.5" floppy drive

SHARP PC-6641



In Stock on Demo

- 386SX/20
- 5.9 lbs.
- 40 MB Drive
- Supertwist LCD VGA

SHARP PC-6220

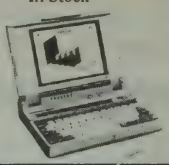
In Stock On Demo

- Backlit LCD VGA Display
- Weighs only 4.4 lbs.
- 12MHz 80C286 Processor
- 20MB Hard Disk Drive

ZENITH data systems — MastersPort 386SX

Groupe Bull

In Stock



- 386SX/20 MHz
- 2MB RAM
- Backlit LCD VGA
- 60MB Hard Disk
- 6.6 lbs.

ZENITH data systems — MastersPort 386SL

Groupe Bull

In Stock On Demo

- 386SL-20/5/0MHz
- 2MB/8MB (64K Cache)
- 60MB Hard Disk
- VGA/32
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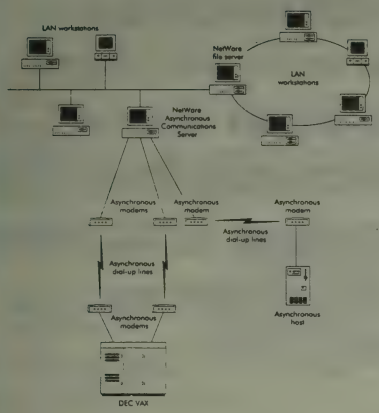

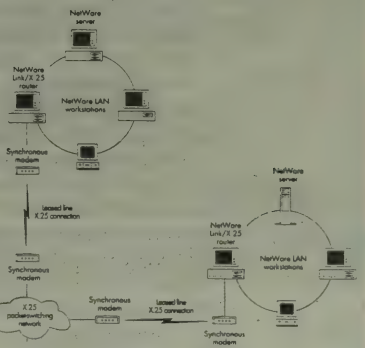

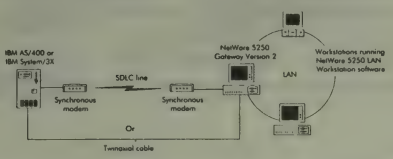

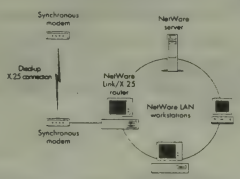

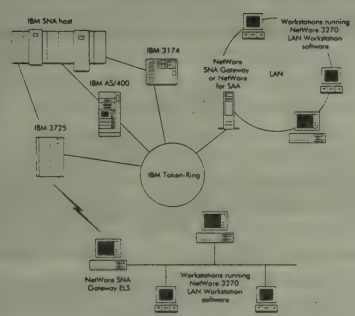

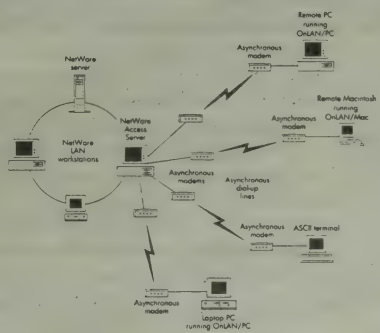

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typewritten is that they are legible and easy to locate on your computer as compared to handwritten notes laying on your desktop.

Broadcasting is another very useful feature. This allows you to use your email system in lieu of interoffice memos. For example, if you need to tell everyone in the office that the firm picnic has been changed from 1:00 pm to 2:00 pm, simply broadcast your message and within a few keystrokes, the task is complete. Using Notework, everyone is notified of the new message by a tone and a blinking signal in the corner of their screen.

Along with handling messages, email should also incorporate some type of file transfer capability. Some packages use actual file transfer methods to attach the message or note while others allow you to perform a screen capture and send only that portion of the file, spreadsheet, letter, etc. that applies to your note or message. The ability to have both features is a real plus.

A message handling service built into the program allows anyone outside the office to access both telephone messages and any other system messages by modem. This is a very powerful feature to keep the communication flowing between administrative staff, professional staff, and clients after hours or when our accountants are in the field.

With Microsoft Windows 3.0 gaining in popularity and usage, many people want email as a Windows application. Several packages already have the ability to use email either through Windows or DOS, making these packages even more desirable.

WINDOWS

With Microsoft Windows 3.0 gaining in popularity and usage, many people want email as a Windows application. Several packages already have the ability to use email either through Windows or DOS, making these packages even more desirable. On our LAN, most users are running under DOS and have not yet installed Windows. In addition, those who have installed Windows on their computer will probably not be in that environment the bulk of the day. The ability to alternate between the two operating systems means that no messages are ever unavailable to the user. Notework offers both a DOS and Windows version, and we intend to add the Windows version of the product in the near future.

If you are currently using an email package in a DOS environment, check with your vendor regarding an upgrade for Windows. This can usually be purchased relatively inexpensively. For example, Notework Corp. offers a Windows upgrade for less than thirty users for $295 and greater than thirty users for $595.

FORM DESIGN SOFTWARE

Electronic form processing is software that lets you design, fill in, and print all your company forms on your computer. Specialized form design software is readily available in the marketplace. Most word processing programs have features that will allow you to design almost any kind of form you wish. However, using your word processing program to design complex forms is not an everyday application, hence, the form designer must know every facet of the program to utilize its enhanced capabilities. This requires a lot of time and does not always produce a high-quality, professional looking form.

Our firm chose the software program PerForm Pro, by Delrina Technology, for designing forms. PerForm Pro allows you to design a form and to electronically fill in the form. This helps to reduce paper flow through the office. Each staff member in our office has a computer on their desk. They simply call up the desired form, such as a new client setup sheet, fill in the pertinent information, and send it on to the administrative staff to handle. There is no paper to hand back and forth, and no missing information since the form is designed in a way that does not allow you to "mail" it until all the information is in.

As another example of the use of form design and fill-in software in our office, we designed our facsimile transmittal sheet in PerForm and each time we send a facsimile, the form is pulled up on the computer and automatically filled in. This eliminates reading illegible handwriting and sends a professionally designed and filled in form. During tax season our tax return instruction letters are electronically filled in. Clients receive a professional, individually tailored letter instructing them exactly what, when, and how much is due with their tax return. This saves the administrative staff time and effort. The forms have been set up with "if, then" statements, which eliminates having to answer certain questions, if a certain statement is true.

What once was a time-consuming and error-prone process, now is done with very few keystrokes and little effort. PerForm Pro provides features that automate form fill-in so that related forms can be grouped together into a form folder, allowing common data to be entered only once; allows only specific types of data to be input into certain fields; sets up tabbing options so that the user is automatically taken to the next field that needs to be filled; calculates dates; does not allow the user to leave the form without filling in required fields; adds up a column of numbers; and also gives the user custom, online help explaining exactly how to fill in the form.

PerForm Pro requires an IBM PC AT or compatible, IBM PS/2 Model 50 or higher, and 100% compatibles with Microsoft Windows 3.0 graphical environment, 640K conventional memory, hard disk with at least 2MB free for the program (this does not include the space required for Windows), MS-DOS v3.1 or higher, and a graphic display system. In addition, Delrina Technology recommends a mouse, VGA or higher resolution display, a laser printer, and additional disk space if you wish to install all of the over one hundred included sample forms, each an average of 10–20K in size.

Form design software eliminates the need of using outside printers to do the typesetting of interoffice forms. Also, PerForm Pro technology is closely linked with database technology, so it allows you to read data from or write it to dBASE-compatible file formats. You can look up a database format file without using the dBASE program. PerForm becomes a bridge between your form processing and data entry needs, preventing the need to reenter data.

Email and PerForm Pro have made a major impact in our office's daily routine. They have significantly enhanced our ability to communicate effectively with our clients and ourselves. ■

RESOURCES:

PerForm Pro for Windows, $295
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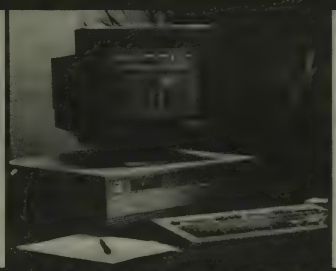

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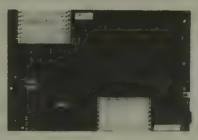

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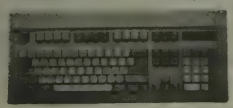

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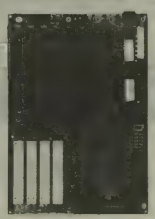

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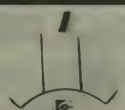

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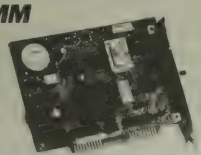

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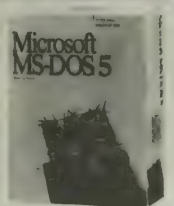

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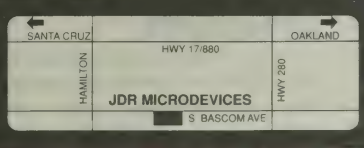

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The Last Of The Do-It-Yourself Server

Plus An Innovative Workstation

BY YACCO

As I promised last month, here's the conclusion of the server project. There's also a suggestion that might be useful if this system is to be used as a personal workstation rather than a server.

KEYBOARDS

You might think that keyboards are a no-brainer—and if you're building a dedicated server, they can be. In my book, cheap is the watchword for anything that gets such little use. However, there are a couple of exceptions.

One is the installation where work space is extremely limited. The Datalux Microtype keyboard occupies slightly less than 11" by 6" without sacrificing the functionality of a full enhanced keyboard. Furthermore, it wasn't designed just to save space, but to be a genuinely productive keyboard. It is so cleverly designed that it's much easier to type on it than you would expect with a nonstandard layout. (If tight space far outweighs cost considerations, Datalux also has a pricey combination keyboard and LCD display. The complete system, including video card, costs $1175.)

LOCAL AREA NETWORKS

Flytech also has an entry in the tiny keyboard market; however, it's bundled with their microscopic workstations. Unbundle it, and it's great for an installation where space is more important than a nonstandard keyboard layout and dual-function key assignments. A typical server's low input demands are perfect.

For nondedicated servers, particularly those running under OS/2, I have another definite favorite: the built-in trackball. Both QTronix and Chicony make inexpensive versions. Either has a slightly unconventional layout to accommodate the trackball in a standard footprint. You can get used to them in a trice with only a small penalty in productivity. They save space in use (the space required to steer a mouse), cut the cable count, store away conveniently, and keep your pointer from getting lost. You may not feel a pressing need for one of these today, but don't be surprised to see future network operating systems sporting a GUI interface.

The Datalux Microtype, the Flytech, the QTronix Mighty KeyBoard KT-30M, and the Chicony KB-5581 aren't as heavy, or as substantial-feeling, as an IBM keyboard, but they have good key action, and they are reliable. (I've been using Chicony keyboards for years, and I haven't worn one out yet.)

Copyright © 1991 by Wayne A. Yacco. All rights reserved. *An editor, writer, and consultant specializing in microcomputers and their business applications, Wayne Yacco writes articles, columns, and reviews for many trade and business publications. He can be reached at Box 269, Burbank, CA 91503.*

COPROCESSORS

You probably don't need a coprocessor for your network server. Your network operating system is unlikely to take advantage of it. However, if you want to build a machine based on this system's motherboard for other applications, it's useful to note that Micronics includes a socket for the Weitek Abacus. For intensive floating-point applications that support it, the Abacus is the ultimate in number-crunching power. Many 80386 motherboards also provide a single coprocessor socket. However, a single socket forces you to choose between an 80387 and a Weitek. With a second socket, the 3167's memory-mapped mode allows it to work in addition to an 80387. On a '486, the Abacus works in addition to the i486's built-in floating-point processor.

ERGONOMICS

This is an area that's of growing interest not only to folks with special needs, but to many managers faced with legislation and potential lawsuits. Good old Baghdad by the Bay (do they still call it that in these post-Desert Storm days?) is a well-known example of the cities innovating in this area of legislation. And at least in LA, there are lawyers advertising on television for the victims of repetitive-motion stress syndrome. It all adds yet another dimension to the task of administering large networks: the physical nature of the workstations connected to your cables.

My own interest falls into the "special needs" category—my back has a couple of kinks in it that can give me pure hell for a month or two at a time. So a while ago, I built my own standing workstation by modifying a conventional computer stand. I put the keyboard on the top printer shelf, and added a monitor valet above that. It worked well enough, but only when I was standing.

Sitting down required a switch to another computer. Files had to

In LA, there are lawyers advertising on television for the victims of repetitive-motion stress syndrome. It all adds yet another dimension to the task of administering large networks: the physical nature of the workstations connected to your cables.

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reside on a network server or be transfered by diskette. At least two machines had to be set up to run the same applications, or I had to have a network version of the software. Either solution was inconvenient, and/or required more resources than should be necessary to support a single user.

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A somewhat narrow CPU holder, that's engineered only for desktop units, is the only potential design flaw in this unit. With a scant 7" maximum aperture, the only floor-standing unit it could accomodate, in my office, was a slim PS/2 model 80. (Other units ranged from 7"–11" in width.) Even so, for most workstation applications, this won't be a limitation. And the design could easily hold much larger systems with a slight modification at the factory.

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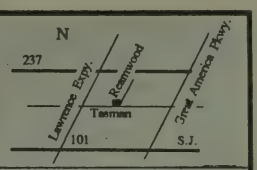

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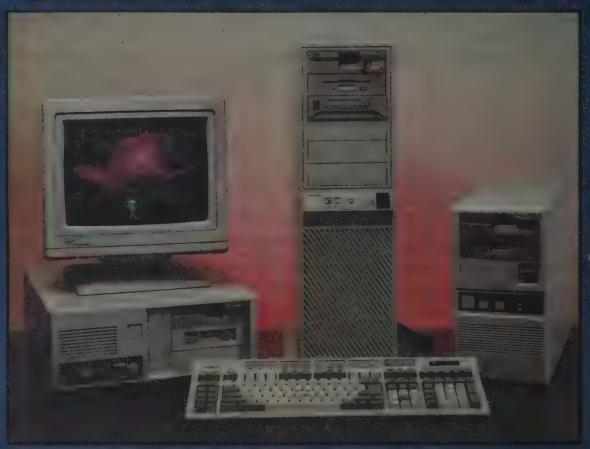

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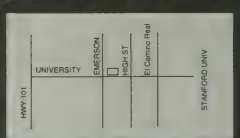

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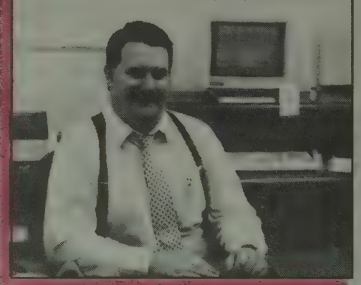

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Viosphere I

The Text Editor As Virtual Reality

BY BENNETT FALK

UNIX

"His shirt's a different color, I think," whispered one.

"Socks," said another in a hushed voice. "The socks are the key. Does he have on a different pair of socks?"

"I can't see his feet," the first replied, straining to get a better view of the man in the cube.

"Hey, what's happenin'?" boomed a perfectly normal voice behind them. The whisperers shot pained looks over their shoulders at the newcomer. The man in the cube continued to stare at the screen in front of him, occasionally tapping the keyboard.

"We don't know," the first whisperer replied darkly.

"But we intend to find out," the second chimed in.

"Oh," said the newcomer, "well, best of luck." He focused beyond them and called out to the man in the cube, "Yo, Nosebest, I need your numbers by noon, okay?"

Without looking up, V. M. "Baba" Nosebest uttered a single unintelligible syllable.

"Say what?" said the newcomer, stepping into the cube. "Hey, if you need more time, I can get it; but I'd really like to wrap up this report today, and I need your numbers by noon, okay?"

Nosebest swivelled his chair slightly to face them. The second whisperer gasped: Nosebest was certainly *not* wearing a different pair of socks.

"I've just discovered something very interesting," he said as though talking to himself. "What day is it?"

"*Tues*day," said the second whisperer significantly.

"Oh," Nosebest replied.

"So what is this thing you've discovered?" the newcomer inquired.

"Vi."

"Vi?"

"Vi."

"Uh, Nosebest, everybody knows about vi already. It's a text editor. The UNIX diehards swear by it, the word processing people hate it, the programmers, except for the EMACS devotees, love it, and most of the other users are just confused by it."

"I'm aware of all that," Nosebest retorted.

"Okay, but just what is this interesting thing you've discovered?"

"You can do everything you need to do *inside* vi." They stared at him. "Really, I've been living in vi for, uh," he glanced down at his watch, "thirty-six hours, now. I suppose there have been a few problems, but with any luck, I may never have to leave vi again."

Copyright © 1991 by Bennett Falk. All rights reserved. *Bennett Falk lives in the Bay Area, writes when he can, and hopes for the best. He works for Sybase, but the opinions and attitudes expressed are his own.*

NOSEBEST IN THE VIOSPHERE

"What the hell are you talking about?" All three of Nosebest's visitors were glowering at him with the same expression.

"Maybe I should begin at the beginning.

"First of all, you know that vi is a 'modal' editor. When you work with vi, you are always in one of three modes: text entry mode, cursor mode, or command mode. When people have problems learning vi, it's usually because they don't understand the business of modes, and specifically, they don't understand the difference between text entry and cursor mode. Cursor movement in vi gets its own mode because vi has an elaborate set of commands for positioning the cursor. Cursor mode happens to be the 'default' mode; from it you can get to both the text command and text entry modes.

"Now there are several nifty ways to run other programs from vi without leaving the editor. The one almost everyone knows is the shell escape from command mode. You enter command mode by typing a ':,' invoke the shell escape with an '!,' and then type in the name of the program you want to run.

"For example, if you wanted to get a listing of the current directory's contents without leaving the editor, you could type:

```
:!ls
```

and the 'ls' output would show up on your screen with a prompt that tells you to press return to continue. The program you run this way can be almost anything, because the shell escape from command mode lets you run things interactively, just as if you had started the command from a UNIX command line. The shell escape from command mode does not affect the file you're editing in any way. When the program finishes, your vi session resumes just where it was before the shell escape.

"Somewhat less well known is the shell escape from cursor mode. Here again, '!' invokes a shell to run whatever program is specified.

"Everybody knows about vi already. It's a text editor. The UNIX diehards swear by it, the word processing people hate it, the programmers, except for the EMACS devotees, love it, and most of the other users are just confused by it."

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Instead of letting you interact directly with the program, however, a shell escape from cursor mode feeds a portion of the file you're editing to the program as input and replaces that part of the file with the program's output. Essentially, this means you can run a program on a file while you're editing it, and this makes it possible to use UNIX utilities and other programs as extensions of vi's editing commands.

"Vi comes in for some criticism because it doesn't have any native 'formatting' commands for text, but the shell escape from cursor mode makes it possible to run an external program to format the text being edited. Most UNIX systems have a modest formatter called 'fmt.' You can run fmt on a file in vi by moving the cursor to the top of the file and typing

!Gfmt

The formatted text will replace the unformatted text in vi's edit buffer.

"Vi's 'undo' command ('u' from cursor mode) will restore the original state of the buffer if the result of the fmt command is not what was desired.

"The whole point of this is to make everything editable, to minimize the number of commands that can't be modified or saved and reused. The key to this business of using a text editor as a general purpose interface is the ability to execute part of the file that's being edited."

"The 'G' in that command is a token to identify how much text the command will affect. In vi's cursor mode, 'G' means from the current cursor position to the end of the file. There are lots of other tokens to mark paragraphs, sentences, or even regular expressions. And of course, the command you execute could be just about anything—sort, nroff, rev, what have you."

Nosebest paused and looked up at his visitors with a benign smile. The visitors fidgeted, rocked from foot to foot, and shook their heads. "Nosebest, all this stuff is in the manual," someone said. "Just what is it you think you've discovered?"

He blinked at them. "I discovered that I would rather interact with vi than with most other programs I use."

They blinked back.

"For example, I use SQL, IBM's Structured Query Language, for database queries, and there's a program named 'qli' that sends the SQL statements that I write to a data server for execution.

"The SQL interpreter is okay, but it's a bare-bones sort of program: It doesn't keep a list of queries I've run, it will

Continued on page 254

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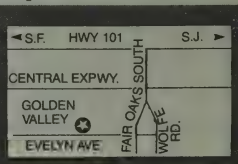

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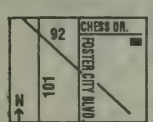

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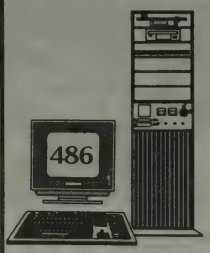

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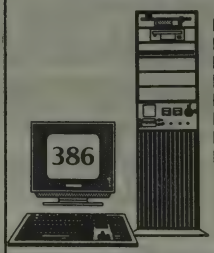

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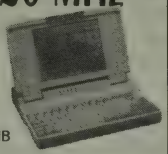

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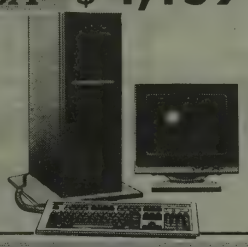

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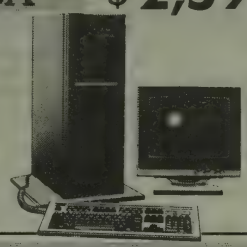

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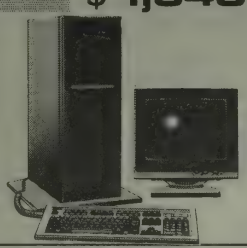

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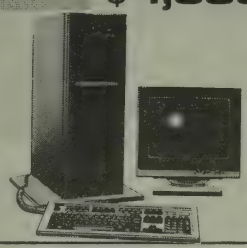
Interlace SVGA monitor (1024X768, 0.28)
Medium Tower Case w/ 230W power supply
101 Enhanced Keyboard
2S/1P/1G ports



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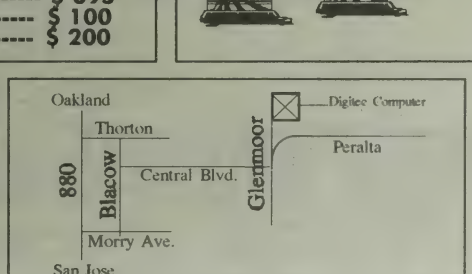

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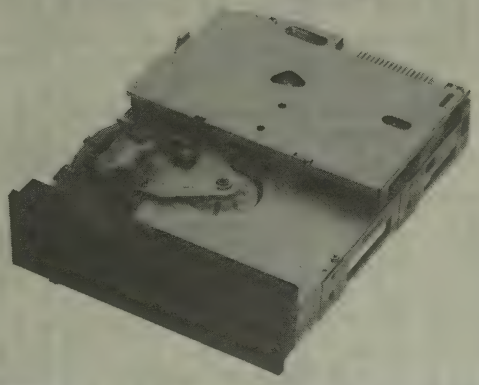

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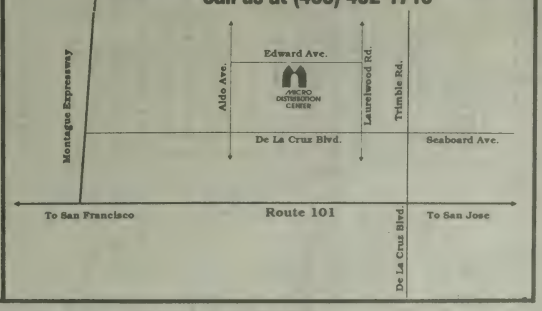

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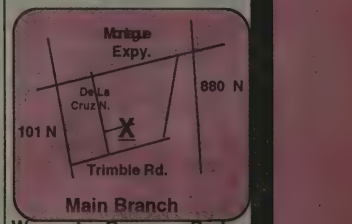

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386SX/16 Super VGA	$849	$949	$999	$1,024	$1,274
386SX/20 Mono	$679	$779	$829	$854	$1,104
386SX/20 Super VGA	$899	$999	$1,049	$1,074	$1,324
386/25 Mono	$799	$899	$949	$974	$1,224
386/25 Super VGA	$999	$1,099	$1,149	$1,174	$1,424

HRW Tower Systems w/Cache

386/33C w/64K Cache · A386/40C w/128K Cache

486s w/External 256K & Internal 8K Cache

Standard System · Tower Case · Hard Drive · Monitor & Video Card

Hard Drives: MB/Ms	IDE 105/18	IDE 120/16	IDE 210/15	ESDI 340/15	ESDI 695/13
386/33C Hires	$1,324	$1,349	$1,599	$2,249	$2,749
A386/40C Hires	$1,374	$1,399	$1,649	$2,299	$2,799
486/25C Hires (ISA)	$1,724	$1,749	$1,999	$2,649	$3,149
486/33C Hires (ISA)	$1,774	$1,799	$2,049	$2,699	$3,199

HRW Desktop Package Specials

Standard Desktop System Features plus:

42 or 105 MB Hard Disk (as listed)
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HRW 386SX/16 Package w/42 MB HD $849
*or lease for as low as $32 per month.**

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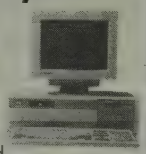
- 2 serial, 1 parallel port
- Real time clock/calendar with battery back-up
- 101-key enhanced keyboard
- 3-Button Microsoft compatible mouse
- Mini Tower case w/power supply



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- 2 serial, 1 parallel port
- Real time clock/calendar with battery back-up
- 101-key enhanced keyboard
- 3-Button Microsoft compatible mouse
- Mini Tower case w/power supply

VGA	SuperVGA
40MB	120MB
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System

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- 2 serial, 1 parallel port
- Real time clock/calendar with battery back-up
- 101-key enhanced keyboard
- 3-Button Microsoft compatible mouse
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VGA	SuperVGA
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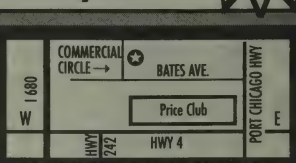

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- Maxi-Switch 101 Keyboard

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- 80387 Socket
- 1 MB Memory Exp To 32 MB
- 64K Cache Expandable
- 2 Serial/1 Parallel/1 Game Ports
- Maxi-Switch 101 Keyboard

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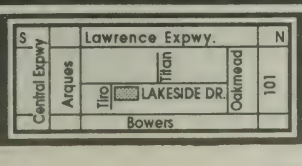

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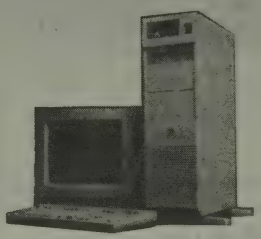

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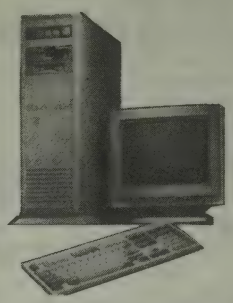

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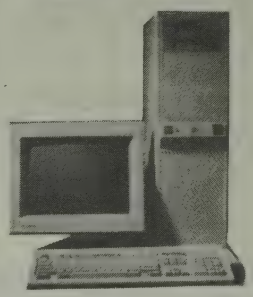

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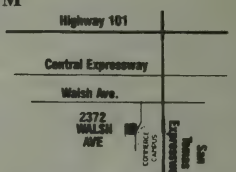

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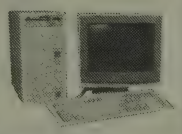

- Intel 486-33 MHz w/64K Cache on board
- 8 MB RAM
- 200 MB Hard Drive
- Teac 3.5 & 5.25 Floppy Drives
- 12" Mono Monitor
- 16-bit Ethernet card
- IDE hard/floppy controller
- AT I/O Card
- Clock /Calendar
- 101 Enhanced keyboard
- Minitower case

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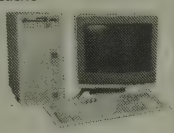
386-33 FILE SERVER



- Intel 386-33 MHz w/64K Cache on board
- 4 MB RAM
- 200 MB Hard Drive
- Teac 3.5 & 5.25 Floppy Drives
- 12" Mono Monitor
- 16-bit Ethernet card
- IDE hard/floppy controller
- AT I/O Card
- Clock /Calendar
- 101 Enhanced keyboard
- Minitower case

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Ethernet Cable (100') RG58-U	32
Custom Cable (25') RG58-U	18

486-33 w/64K Cache
Super VGA Monitor
200 MB Hard Drive

- Intel 486-33 w/64K Cache
- 4 MB RAM exp. to 32 MB
- 200 MB Conner Hard Drive
- 14" Mitac SuperVGA Monitor (1024x768) .28 dpi
- Trident Super VGA Card w/1MB
- Teac 3.5 & 5.25 Floppy Drive
- IDE Hard/Floppy Controller
- AT I/O Card
- Clock/Calendar
- 101 Enhanced Keyboard
- Minitower Case

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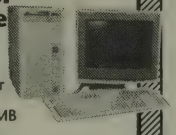
386-40 w/64K Cache
Super VGA Monitor
120 MB Hard Drive



- AMD 386-40
- 4 MB RAM exp. to 32 MB
- 120 MB Conner Hard Drive
- 14" Mitac Super VGA Monitor (1024x768) .28 dpi
- Trident Super VGA Card w/1MB
- Teac 3.5 & 5.25 Floppy Drive
- IDE Hard/Floppy Controller
- AT I/O Card
- Clock/Calendar
- 101 Enhanced Keyboard
- Minitower Case

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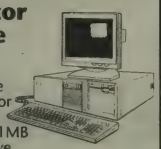
386-25
Super VGA Monitor
80 MB Hard Drive



- Intel/AMD 386-25
- 2 MB RAM exp. to 8 MB
- 80 MB Quantum Hard Drive
- 14" MitacSuper VGA Monitor (1024x768) .28 dpi
- Trident Super VGA Card w/1MB
- Teac 3.5 & 5.25 Floppy Drive
- IDE Hard/Floppy Controller
- AT I/O Card
- Clock/Calendar
- 101 Enhanced Keyboard
- Minitower Case

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386SX-20
Super VGA Monitor
80 MB Hard Drive

- Intel 386SX-20
- 2 MB RAM exp. to 8 MB
- 80 MB Quantum Hard Drive
- 14" Mitac Super VGA Monitor (1024x768) .28 dpi
- Trident Super VGA Card w/1MB
- Teac 3.5 & 5.25 Floppy Drive
- IDE Hard/Floppy Controller
- AT I/O Card
- Clock/Calendar
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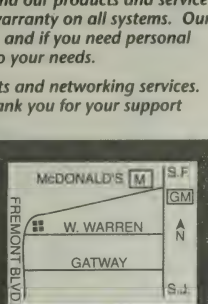

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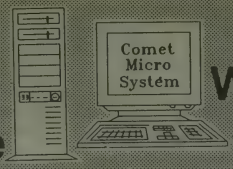

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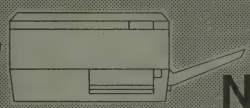

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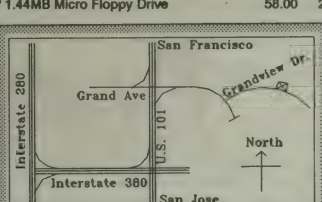

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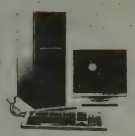

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- Teac 1.44 MB 3.5" FDD
- Teac 1.2 MB 5.25" FDD
- 2 Serial, 1 Parallel, 1 Game port, I/O Card
- Maxiswitch 101-Key Enhanced Keyboard
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- Viewsonic 4 Super VGA Monitor (1024x768 w/.29 Dot Pitch)
- Teac 1.44 MB 3.5" Floppy Drive
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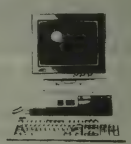
- 2 Serial, 1 Parallel, 1 Game port, I/O Card
- Maxiswitch 101-Key Enhanced Keyboard
- Desk Top or Tower Case w/ Power Supply



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Citizen GSX 140 Plus 24pin	315
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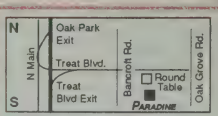

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386-33 w/64K Cache	229
386-25 w/64K Cache	210
386-25 Cache	119
386-20 w/CPU	199
386SX-16 w/CPU (C&T)	179
286-16 w/CPU (VLST)	99
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WD 93044 40 MB, IDE, 28ms	$170
TEAC 340 40 MB, IDE, 23ms	195
CONNER CP300 40 MB, 25ms	195
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CONNER 200 MB, IDE, 3.5")	560
ST 1239A 211 MB, IDE, 3.5"	575
MAXTOR 7120A 120 MB 3.5"	359

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AAmazing SVGA Non-Int 0.25	$395
VGA S VGA 800x600	275
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AAMAZING 14" SVGA 1024x768 0.28	310
NEC 2A MULTI VGA	480
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14" HYUNDAI 640x480 0.39	259
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TVGA 1 MB 1024x768	99

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KEYTRONICS 101	45
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27128-200ns	3.00
27128-150ns	5.00
27256-200ns	3.50
27C256-200ns	3.75
27C512-200ns	6.00
27512-200ns	6.00
27C020-150ns	13.00

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514402-80 (1X4) STT. ZIPP	$35
514400-80 (1X4) ZIPP	32
514400-80 (1X4) DIPP	40
514400-80 (1X4) SOJ	22
514100-80 (4X1) SOJ	22

MISC. IC'S

256X4-80 (SOJ)	CALL
256X1-80 (PLCE)	CALL
1X1-80 (SOJ)	CALL
1X1-80 (ZIPP)	CALL
1X1-80 (STTIC)	CALL
256X4-80 (STTIC)	CALL
256X4-80 (STT.Z	CALL
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64X4-80 12-10-80 (SOJ)	CALL
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8088-2/10	CALL
82450/16450	CALL
MC1488/MC1489	CALL

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1MB Board		$ 99
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2MB Board		150
4MB Board		215
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1039136	1MB Board	$129
1039137	2MB Board	200
1038675	3.5MB Board	345
TI MicroLaser & MicroLaser PS		
	1MB Module	$85
Panasonic KX-P4420; KX-P4450I		
1MB Board		$139
2MB Board		189
3MB Board		239
4MB Board		289

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2MB Board	189
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FOR CANON LBP-4

1 MB	$225
2 MB	399

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1 MB	146
2 MB	399
3 MB	549
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1 MB UPGRADE BRD LBP-8111	358

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256X4-100NS	5.50
256X4-80NS	5.75
256X4-70NS	6.00
256X4-60NS	6.50

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1 MGXI-60NX	7.50

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51258P-10	$2.99
AAA 2800-08	3.00
AAA 2800-07	3.25
AAA 2800-60	4.50
1X4-80 ZIPP	35.00
1X4-80STT ZIPP	39.00
1X4-70STT ZIPP	39.00

DRAM 64x4

4164-150	$2.00
4164-120	2.50
4164-100	2.75
4164-80	3.00

DRAM 64x1

4164-15	$1.00
4164-12	1.50
4164-10	1.75

DRAM 256XI

256XI-150NS	$1.79
256XI-120NS	1.99
256XI-100NS	2.00
256XI-80NS	2.25
256XI-70NS	2.35
256XI-60NS	3.99

COMPAQ Memory

DeskPro 386/20e; 20; 35e, 25; 286e

113131-001	1MB Module	$125
113132-001	4MB Module	330

DeskPro 386/20e; 25e

113644-001	1-9MB Exp Brd	225
113645-001	4-12MB Exp Brd	529

DeskPro 386s-16

113646-001	1MB Module	125
112534-001	4MB Module	315
113633-001	1-9MB Exp Brd	225
113634-001	4-12MB Exp Brd	529

DeskPro 286N; 386N; 386SX/20

118688-001	2MB Module	200
118690-001	4MB Module	545

DeskPro 386N; 386SX/20

118688-001	2MB Module	225

DeskPro 286N; 386N

118700-001	0-4MB Exp Brd	115

DeskPro 386/33

115144-001	2MB Module	215

DeskPro 386/33L; 486/25; 486/33L; SystemPro

115144-001	2MB Module	200
116561-001	8MB Module	900
116568-001	32MB Module	6000

DeskPro 386/16

118071-001	1MB Kit	169
118069-001	1MB Exp Brd	398
118069-002	2MB Exp Brd	567
118072-001	4MB Kit	399
118070-001	4MB Exp Brd	799
118070-002	8MB Exp Brd	1199

Portable 386

107651-001	1MB Kit	268
107653-001	4MB Exp Brd	775
107654-001	4MB Exp Brd	775

Portable LTE (8086)

117077-001	512K Module	140

Portable LTE/286

117081-001	1MB Module	100
117081-002	2MB Module	150
117081-003	4MB Module	630

Portable SLT/286

110235-001	1MB Module	190
110237-001	4MB Module	628

Portable SLT/386

118303-001	1MB Module	250
118304-001	2MB Module	410
118305-001	4MB Module	819

Portable III

107331-001	512K Kit	99
107332-001	2MB Kit	218

HP Personal System Memory

VECTRA 486 PC (must install in pairs)

D2150A	1MB Module	115.00
D2151A	4MB Module	390.00
D2152A	8MB Module	CALL

VECTRA 386/25 PC

D2381A	2MB Module	210.00
D2152A	8MB Module	1019.00

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D1640A	1MB Kit	126.00
D1642A	4MB Kit	365.00

VECTRA QS/16S

D1540A	1MB Kit	112.00
D1354A	2MB Kit	148.00
D1542A	4MB Kit	325.00

VECTRA ES/12PC

D1354A	2MB Kit	148.00

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1Mx9-80	47.00
1Mx9-70	48.00
256x9-70	18.00
256x9-10	14.00
256x9-80	16.00
256x9-60	18.00

IBM PS/2 Memory

Mdl 30/386; Exp Brd 1497259

30F5348	512K Kit	$ 54.00
30F5360	2MB Kit	175.00

Mdls 70-061; -121; 55SX; 65SX; Exp Brd 6450605; 6450609; 34F3077; 34F3011

6450603	1MB Module	95.00

Mdls 70-061; -E61; -121; 50Z; 55LS; 65LS; 55SX; 65SX; P70; Exp Brd 6450605; 6450609; 34F30xx

6450604	2MB Module	179.00

Mdls 70-A21; -A61; -B21; -B61

6450608	2MB Module	150.00

Mdls 55SX; 65SX; 55LS; 65LS

34F2933	4MB Module	370.00

Mdl 80-041

6450375	1MB Card	145.00

Mdls 80-111; -121; -311; -321

6450379	2MB Card	220.00

Mdls 80-A21; -A31

6451060	4MB Card	469.00

Mdls 90; -95

6450902	2MB Module	325.00
6450128	4MB Module	630.00

Mdls 50 & 60

6450609	2-14MB Exp Brd	529.00

Mdls 70 & 80

6450605	2-8MB Exp Brd	489.00
34F3077	2-14MB Exp Brd	500.00
34F3011	4-16MB Exp Brd	925.00

Adapter 6450367

6450372	2MB Module	285.00

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1057035	512K Upgrade	110.00
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M05143LL-A	8MB Kit	700.00

Mac IIci; IIsi

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Mac IIfx

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4 MB KIT 286 STEP 12, 16, 20 386 STEP 16	270
1 MB KIT 386 STEP 16, 20, 25	81
2 MB KIT 386 STEP 16, 20, 25	166
4 MB KIT 386 STEP 16, 20, 25	254
8 MB KIT 386 STEP 16, 20, 25	556

NEC MEMORY

POWERMATE SX PLUS

1-2 MB W/1 APC-H850E		$299
4-8 MB W/4 APC-H52E		825

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286, 386SX16 1 MB		269
4 MB		749
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386 2 MB		489

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Mdls 3/60; 3/80; 386i/150x; 4/60; 4/65; 4/330; 4/370; 4/390; SPARC 1

4MB Memory Kit		$299

Mdls 4/110; 386i/250

X116D	16MB Kit	919

Mdls 4/60; 4/65; 4/330; 4/370; 4/390

X116H	16MB Kit	1319

Mdls 4/330; 4/370

X108E	8MB Kit	919

Mdl SPARC SLC

X105Z	4MB Module	519

SUN 3/100's series

4-24MB Exp Brd	1219

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Mdl 3/50

4-8MB Exp Brd	769

Mdl 4/330

8-64MB Exp Brd	2699

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Premium II 386/SX20; 386/33T; 486

500780-003	1MB Module	$95
500780-004	4MB Module	450

Premium 386/33; 25; SX/16; 486/33; 25T; 25; 25E; Cupid Exp Brd 500722-004

500718-002	1MB Module	79

Premium 386/25; SX/16

500718-001	1MB Module	80

Premium 386C; 386/16; Advance FASTRAM; FASTboard 386

500510-007	1MB Kit	95
500510-008	4MB Kit	275

Premium 386

500510-003	1MB Kit (static)	150
500510-004	4MB Kit (static)	350

Cupid Exp Brd for Premium 386/25; 386/33; 486's

500722-004	1-16MB Exp Brd	425

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Zenith Data Systems Memory

Mdl Z-386SX

Z-605-1	2MB Kit	$189

Mdls Z-386/33E; 33; 25; 20

ZA-3800-ME	1MB Module	95
ZA-3800-MK	4MB Module	550

Mdls Z-386/33; 25; 20

ZA-3600-MG	2MB Module	175

SuperSport SX

ZA-180-64	2MB Card	329
ZA-180-86	2MB Card (ALPHA)	339
ZA-180-87	2MB Card (BETA)	339

SuperSport 286; 286E

ZA-180-66	1MB Card	145

SuperSport 286E

ZA-180-64	2MB Card	329

TurboSport 386E

ZA-3034-ME	1MB Card	249
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	33MHz	199.00
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	25MHz	199.00
68010	16MHz	60.00

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80287-6 6MHz	$ 89.00
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80387DX-33	$235.00

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3167-20 20MHz	$300.00
3167-25 25MHz	$400.00
3167-33 33MHz	$500.00
4167-25MHz	$600.00
4167-33MHz	$700.00

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83087-16 16MHz	$175.00
83087-20 20MHz	$175.00
83087-25 25MHz	$175.00
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83SX87-16 16MHz	$120.00
83SX87-20 20MHz	$125.00

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8C287-10	$ 79.00
8C287-12	$ 89.00
8C287-20	$ 99.00
8C387-20	$175.00
8C387-25	$175.00
8C387-33	$200.00

AMD

80C287-10	$ 89.00
80C287-12	$110.00

ULSI

US 83C87 16 MHz SX	$120
US 83C87 20 MHz SX	135
US 83C87 25 MHz	145
US 83C87 33 MHz	175

Toshiba Portable Memory

T1200XE	2MB CARD	$194.00
T1600	2MB CARD	$194.00
T3100SX	2MB CARD	$194.00
	4MB CARD	$570.00
T3100e	512K CARD	$135.00
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T3200SX	2MB CARD	$194.00
	4MB CARD	$570.00
T3200	3MB CARD	$349.00
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T5100	2MB CARD	$194.00
T5200; T8500	2MB CARD	$194.00

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80386DX-16	$ CALL
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80386DX-25	CALL
80386DX-33	CALL
80386sx-16	CALL
80386sx-20	CALL
80486DX-25 (B6)	CALL
80486DX-33 (B6)	CALL
80286-8 (PLCC)	CALL
80286-10 (PLCC)	18.00
80286-12 (PLCC)	20.00
80286-16 (PLCC)	20.00
82385-20	60.00
82385-33	75.00
V-20-8	6.00
V-20-10	10.00
V-30-10	10.00

AMD

80386 DX 40 ..... CALL

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1Mx8-10	40.00
1Mx8-80	45.00
4x8-80	190.00

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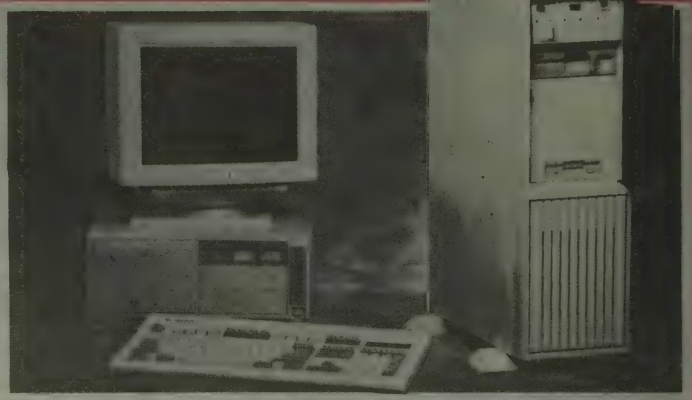
Clemsen University	S.W. Bell
Washington Post	Switzerland National Railroad
DuPont	U.S. Naval Department
Lockheed Missile/Space Eng.	*and the list goes on and on...*



Standard System Features:

(*Unless specified differently in Specials)

- Motherboard and CPU
- 1MB RAM on-board
- Math co-processor socket
- 1.2MB or 1.44MB FDs(Teac)
- 1:1 HDD/FDD controller
- 2 serial/1 parallel ports
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(Prices below do not include Hard disk drive, monitor / card)

486-33 EISA *w/64k Cache/Micronics)* **.... $1,785**

486-33 ISA *w/64k Cache (MCI/Symphony)* **$1,045**

486-33 ISA *w/64k Cache (Opti™ Chipset)* **.... $945**

386-33 *64K Cache (Symphony™)* **..... $695**

386-33 *w/64k Cache (C & T™ Chipset)* **..... $595**

386-33 *(Symphony™ Chipset)* **..... $540**

386-SX20 **..... $418**

386-SX16 **..... $388**

286-25 **..... $388**

286-16 *(VLSI™)* **..... $328**

Special!

LAPTOP 386SX-16 40MB HDD/2MB RAM **..... $1495**

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- Intel 80486-33MHz Processor
- Micronics Motherboard
- 64k Cache SRAM exp to 256K
- 4MB RAM 70ns exp. to 64MB onboard
- 1.2MB and 1.44MB Floppy Drives (TEAC)
- 210MB 13ms IDE Hard Drive (Maxtor)
- Orchid ProDesigner IIs VGA card w/1MB
- 14" Seiko CM-1450 VGA Monitor/non-int.
- 1 Parallel/2 Serial Ports
- IDE HD/FD Controller
- Keytronics 101 Keyboard (USA)
- Tower Case w/7 bay drive/digital/display/230W P/S
- MS.DOS 5.0 & MS.Window 3 / mouse

MICRO-L ISA 486-33 Cache $2645

- Intel 80486-33MHz Processor
- Upgrades to 50MHz; Socket for removable crystal allows for CPU changes
- AMI BIOS, Symphony™ Chipset, Dallas DS1287 real-time clock (w/10-year warranty)
- 64k Cache SRAM exp. to 1MB onboard
- 4MB RAM 70ns exp to 32MB onboard
- 1.2MB & 1.44MB Floppy Drives (TEAC)
- 120MB IDE HDD • IDE HD/FD Controller
- Orchid ProDesigner IIS VGA Card w/1MB
- 14" Seiko CM-1450 VGA Monitor/non-int.
- 1 P/2 S Ports • Keytronics 101 Kybd (USA)
- Tower case w/7- bays/digital disp/230W P/S
- MS-DOS 5.0 • MS-Windows 3 & mouse

MICRO-L 486-33 $1895

- Intel 80386-33MHz Processor
- Upgrades to 40MHz; Socket for removable crystal allows for CPU changes
- AMI BIOS, Symphony™ Chipset, Dallas DS1287 real-time clock (w/10 year warranty)
- 64k Cache SRAM exp. to 1MB onboard
- 4MB RAM 70ns exp. to 32MB onboard
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- 120MB 19ms IDE HDD & HDD/FDD cntrlr
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- 1 P/2 S Ports • Keytronics 101 Kybd (USA)
- Tower case w/7-bays/digital disp/230w P/S
- MS-DOS 5.0 • MS-Windows 3.0 & mouse

MICRO-L Notepad 386LE Special! $1,950

- Intel 80386SX-20 w/80387SX socket
- 2MB exp. to 3/ 5MB
- 60MB HD & 1.44MB FD
- LCD VGA CCFT Back-lit (640 x 480
- AC adapter (90-250V)
- Optional : Int 2400bps modem - MNP 5 Hayes compitbl/1 P/ 1S port / Ext VGA port/ Exp. slot for LAN or batt power /5.25" & 3.5" FDD connectors
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- Dim: 12.2"x10"x1.7" (w x d x h)
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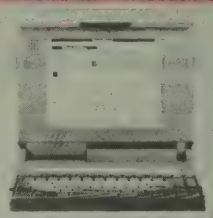
- Removable (NiCad) battery - 2Hrs. operating life, recharges in 2.5 hrs from unit or AC adapter
- Optional 2MB memory kit - add $230



MICRO-L 386-33 $1565

- Intel 80386-33MHz Processor • AMI BIOS
- Upgrades to 40MHz; Socket for removable crystal allows for CPU changes
- 4MB RAM 70ns exp.to 8MB onboard
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- 80MB 17ms IDE HDD w/32k cache
- 14" SVGA (Relisys RE-9514) monitor 0.28 dp 1024 x768 • 16-bit SVGA w/1MB RAM
- 1 Parallel/1 Game/2 Serial Ports
- Keytronics 101 Keyboard (USA)
- Deluxe Baby AT Case 200W P/S, 6-bays
- MS-DOS 5.0 & MS Window 3.0 and Mouse

MICRO-L 386-SX 20 $1365

- Intel 80386-SX/20MHz CPU • AMI BIOS
- 4MB RAM exp. to 8MB onboard
- 1.2 and 1.44 FDD (TEAC)
- Hard and floppy controller
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Your First Computer

About Graphics Software (And Hardware)

BY MIKE MARKOWITZ

Until quite recently (like the 1970s) computers were text-based devices—if you wanted to draw pictures, you had to spell them out with characters:

```
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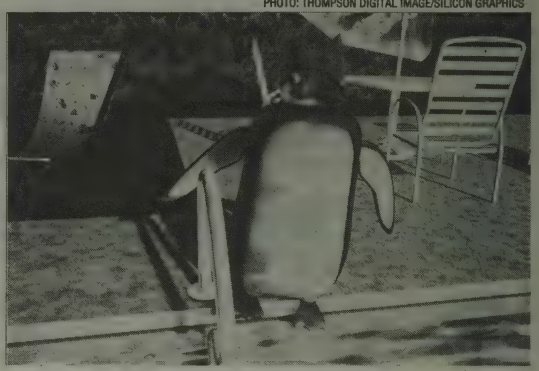
Computer telephone communication is still mostly limited to text, and the online community has evolved a collection of little character faces (turned sideways) to express feelings pictorially:

:-)	smile
:-]	smirk
;-)	wink
:-(	frown

PHOTO: THOMPSON DIGITAL IMAGE/SILICON GRAPHICS



At the high end, graphics tools allow the artist to create photo realistic images from bits and bytes.

MARKET SECTORS

In the past ten years, the quality of video graphic display and printed graphic output on low-cost personal computers has gone from the level of crude greeting-card cartoons to a high standard of camera-ready precision. There are several different markets for personal computer graphics:

•Personal graphics software is a category that was created by programs like Brøderbund's Print Shop (still available in Macintosh, IBM, and Apple II versions). The best programs make it hard for you to design totally ugly greeting cards, flyers, banners, calendars, or certificates. They allow users without artistic talent or inclination to adorn their work with "clip art"—ready-made, copyable pictures, organized in topical collections.

•Presentation graphics software creates "slide shows" and overhead projector transparencies. You should be able to create word charts in bold, highly readable typefaces, org charts, and graphs based on numbers imported from spreadsheets. You should also be able to access a collection of business-oriented clip art images to illustrate ideas. Harvard Graphics (from Software Publishing Co.) is the most widely used PC software in this category, while PowerPoint (Microsoft) and Persuasion (Aldus) are leading competitors for the Macintosh (and Windows) market.

•Illustration software is used mainly by professional graphic artists. It should provide smooth, flexible curves and subtle shading effects. It should import and export a wide variety of different file formats and support the best state-of-the-art printers and output devices. Illustrator (Adobe) and FreeHand (Aldus) are well-known Macintosh examples, and Corel Draw (for Windows) is an impressive example of what can be done on the PC side.

•CAD (Computer Aided Design) software is used by architects and engineers to replace the drawing board and drafting tools. CAD software should make the user more productive and reflect the conventions and style of work of the user's industry or profession.

WHO NEEDS COMPUTER GRAPHICS?

People who need to create drawings on a computer include architects, engineers, illustrators, and designers. Traditional methods using a drawing board and pen or pencil still offer many advantages, including low cost, familiarity, and absolute control, limited only by the dexterity of the user. Using a Mac or PC as a serious graphic design tool may require a major investment in video hardware, output devices, memory, and, of course, software.

Potential advantages of doing graphics on a computer include precision, reproducibility, and ease of experimenting with alternative designs, layouts, and palettes. Digital artwork is easy to store and retrieve, and, if data integrity is assured, the colors will never fade.

HOW COMPUTERS MAKE PICTURES

Graphic standards define the way that computer hardware displays pictures—this includes things like the screen resolution and number of colors available. For example, the classic monochrome Macintosh screen is 512 pixels wide by 384 pixels high, while the Mac II color monitor is 640 by 480 pixels, in 16, 256, or millions of colors (depending on software, available memory, and other configuration details).

The Apple II was designed from the beginning to be able to display color graphics as well as text, but it suffered from a confusing array of different standards and formats. The IBM PC was originally offered as a text-based system, with graphics as an afterthought. The rapid evolution of PC graphics left a legacy of incompatible standards based on various types of video cards: CGA, EGA, VGA, etc.

Graphic formats define the way a computer program saves, imports or exports pictures. For example, the PICT format is "understood" by almost every Macintosh graphic program, while the DXF format used by AutoCAD has become a de facto standard for PC-based drawing programs. TIFF (Tagged Image File Format) is a widely

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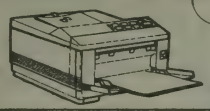

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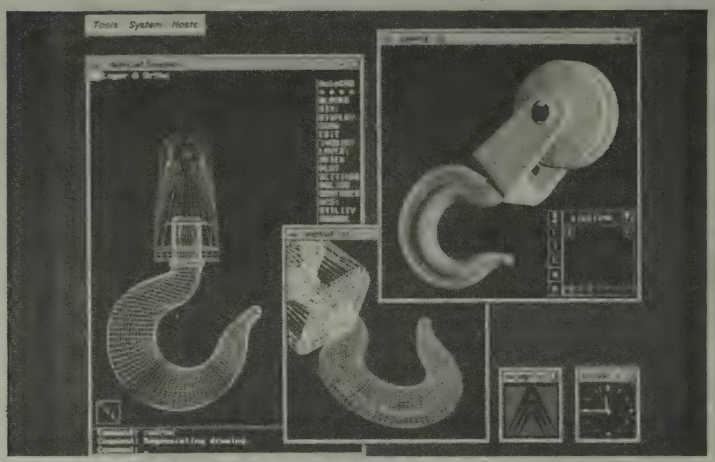
Potential advantages of doing graphics on a computer include precision, reproducibility, and ease of experimenting with alternative designs, layouts, and palettes. Digital artwork is easy to store and retrieve, and, if data integrity is assured, the colors will never fade.

adopted set of formats for bitmapped graphics created on scanners. In evaluating any graphics program, the range of supported formats is a very important criterion.

Moving graphics between different programs, or even different computer systems, can be easy, difficult, or impossible depending on the available formats. Converting a graphic from one format to another may involve the loss of information, precision, color fidelity, or other critical features. Some formats use space very efficiently (such as GIF, a compressed format developed for sending color images over phone lines). Other formats require vast amounts of disk storage (TIFF, for example). Color graphics formats are often described in terms of the number of "bits" used to represent color information. For example, 8-bit color provides a palette of 256 shades, while 24-bit color allows a photo-realistic range of over sixteen million colors.



CAD software like AutoCAD (shown here with 3-D enhancements on a Silicon Graphics workstation) are precise tools for engineers and designers.

There are two fundamentally different ways that computers represent graphics—bitmaps and objects. Programs that create bitmap graphics are often described as "painting" software, while programs that create object graphics are described as "drawing programs." Each approach has its own advantages, and some programs even provide you with both kinds of tools in one package.

BITMAPPED GRAPHICS ("PAINT")

The Macintosh displays text, graphics, and all the furniture of its user interface (icons, menus, windows) as bitmapped graphics. MacPaint (originally released with the first Mac in 1984, now published by Claris) set the standard for monochrome bitmapped graphics software. ("Monochrome" means that every pixel or dot on the screen is either black or white.) It offered a simple "palette" of tools for drawing lines, boxes, text, and circles, along with a "paint bucket" that filled any enclosed area with a pattern, and an "eraser" that obliterated everything it was dragged over.

Selecting specific areas of the screen is one of the trickier aspects of using a paint program. MacPaint provided two ways to do this—dragging from corner to corner with a "selection rectangle," or tracing the outline of any irregular area with a "lasso."

Paint programs don't "remember" that circles are circles and text is text. Once something has been painted on the screen, it's just a collection of pixels. You can erase part of a word, but you can't go back and edit it. Paint programs are also limited to the resolution of the screen (72 dots per inch on the Mac), even if your printer is capable of finer resolution (most are).

PC Paintbrush is the best known paint program in the MS-DOS world. The drawing program included with Microsoft Windows also has some painting tools. SuperPaint, originally developed by Silicon Beach and now published by Aldus (v3.0 just released at a list price of $199), is one of the most popular and versatile Macintosh paint programs, but a very serviceable set of paint tools are included free with HyperCard, a program bundled with every new Mac.

OBJECT GRAPHICS ("DRAW")

Programmers sometimes refer to this class of software as "vector" graphics, since the mathematical description of a line in terms of a starting point, length, and direction is called a vector.

There are two basic ways that drawing programs create objects.

The older way is to select from a menu what kind of object you want (circle, rectangle, polygon, etc.) and then to type in the exact coordinates and location of the object. This was how mainframe and minicomputer drawing software usually worked. This kind of software can be hard to learn, but once the operator has mastered the keystroke sequences, it can be very fast and productive to use.

The newer "graphic user interface" drawing programs create objects when the user selects a particular tool from a "palette" and then points and clicks (with a mouse or other pointing device) to specify the location and dimensions of the object. This kind of software is easy to learn, but it can be hard to achieve the precision required for drafting or technical illustration.

Straight lines and circular arcs are easy for drawing programs, but more complex curves have always been a challenge for programmers. On a drawing board, a draftsman has various manual tools that help in drawing smooth curves. "French Curves" are beautiful, complex rigid guides that can be rotated and flipped to fit a curve through several points. "Splines" are flexible metal or plastic strips that can be bent to shape and held in place by lead weights, while the drafter traces the outline. The term "spline" is also used to describe a wide range of mathematical curves, such as cubic splines and B-splines.

Simple drawing programs often let you click in a series of points, then the program plots the simplest curve that passes through each point. Many artists and illustrators prefer the much more complex "Bezier curves," which give each "control point" a pair of moveable "handles" that determine the slope of the curve on either side of the point. By manipulating the handles, the shape of the curve can be modified and adjusted.

THE FUTURE

During the last few years, most of the evolution of computer graphic software has involved the addition of larger and larger sets of features and tools. The result has been programs that can create wonderful effects, if you are willing to devote your life to them. Programmers and

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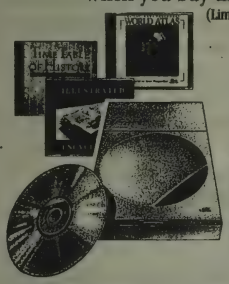

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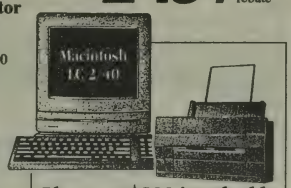

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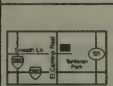

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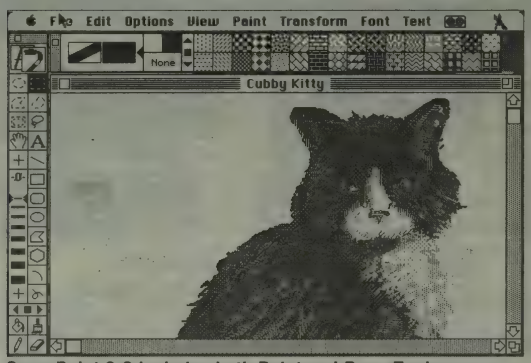

SuperPaint 2.0 includes both Paint and Draw Tools.

developers have been able to rely on rapid increases in the processor speed and memory size of the "typical" desktop computer to keep the performance of their bloated, feature-laden monsters within acceptable limits.

There are some indications that graphic software will soon begin getting smarter, not just bigger. Decades of academic research in "artificial intelligence" are beginning to pay off in features of actual products. A good example is the geometric inference engine or "Drafting Assistant" built into Ashlar Vellum, a $1995 program with versions for Macintosh, Windows 3.0, and Silicon Graphics workstations. Running constantly in the background, this software process "knows" the rules of geometry and generates a constant stream of feedback to the user about points, lines, and relationships in the drawing. The overall effect is that the program seems to anticipate what you want to do next.

A very different example is Kid Pix from Brøderbund, a low-cost painting program for children (with Mac and PC versions). Kid Pix has a variety of "wacky brushes"—"smart" painting tools that have built-in special effects. The tree brush creates lines that spontaneously branch out, while the drip brush leaves a random trail of drips.

It isn't difficult to imagine draw or paint programs that incorporate expert systems that "know" principles of good design. These programs might dialog with the user, to determine the desired style, mood, or impact, and provide appropriate tool sets, or global transformations.

The mechanical aspects of the graphic user interface are also changing. Most artists agree that the mouse is great for pointing, but a very poor tool for drawing or painting. One possible direction is seen in the new Wacom pressure-sensitive graphic tablet, which allows software to emulate many aspects of traditional artistic media.

As 3-D graphic modeling becomes more common on desktop computers, a 3-D analog of the mouse, like that recently announced by Logitech, will become a necessity. Two-dimensional graphic software aims to emulate the tools of the draftsman and the painter, but 3-D software has to do a much better job emulating the tools of the sculptor, the potter, and the machinist. Many current 3-D CAD systems fail to provide the user with adequate position and orientation feedback, leading to "3-D vertigo" or the "lost in space" syndrome. As long as the user is limited to looking at a flat screen, rather than reaching into (or navigating through) a perceived space, there will be no general solution to this problem. ■

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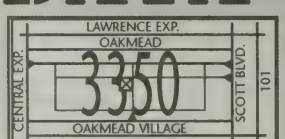

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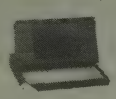

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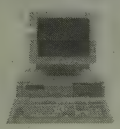

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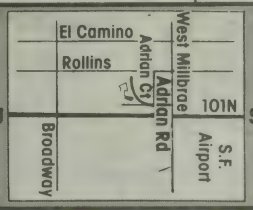

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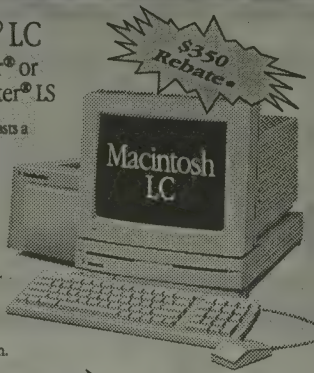

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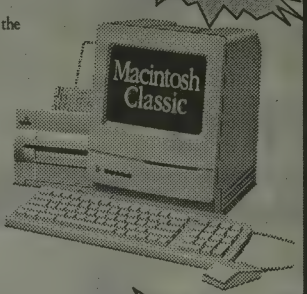

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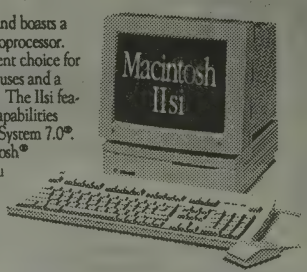

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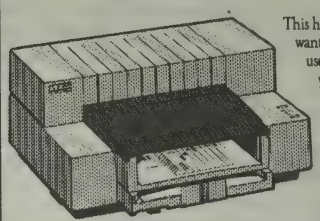

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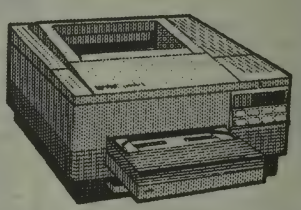

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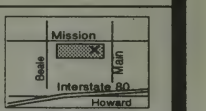

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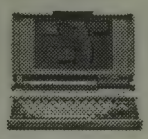

The 16MHz, 80386SX based T2000SX is a tiny portable that packs major punch. It is expandable to 9MB RAM and features an IBM compatible VGA display. So don't let its dimunitive size fool you. When it comes to power, this PC stands tall.

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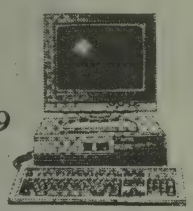

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NEC

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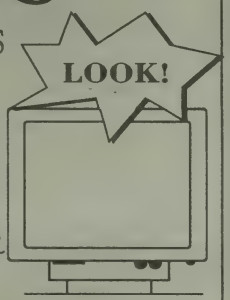

A high resolution color monitor that supports numerous standards, including, MDA, CGA, EGA, VGA, extended VGA, Super VGA and Macintosh II (with adapter). It can use analog input for an unlimited number of colors, plus the case is designed with ergonomics in mind.

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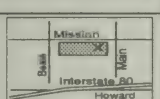

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The Kings Of Memory

As New Computing Environments Demand More And More RAM, Enterprising Third-Party Vendors Find A Need And Fill It

By Yacco

Photos: Anna Luken

For the next few years, [illegible] Access Memory is likely to be [illegible] the top of every personal computer user's shopping list. What seems like memory-laden power machines today will soon become the laughable equivalent of those quaint old 4KB mainframes of the late '50s.

Speaking at last year's UNIX Expo West, Sun Microsystems cofounder and vice presi-

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Landmark:	147MHz	151MHz	65.5MHz	53.8MHz	43MHz	29MHz
BIOS	Mylex	AMI	AMI	AMI	AMI	AMI
Numeric Support:	Built-in	Built-in	Cyrix/Intel	Cyrix/Intel	Cyrix/Intel	387SX
8-Bit Slot	N/A	N/A	N/A	2	2	2
16-Bit Slot	N/A	8	7	7	7	7
32-Bit Slot	8	N/A	1	1	1	0
BUS I/O (MHz)	EISA(8.33)	AT(8.12)	AT(8)	AT(8)	AT(8)	AT(8/10)
Memory Expandable To:	0MB 128MB	4MB 32MB	4MB 16MB	4MB 16MB	2MB 16MB	1MB 16MB
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I/O Port	2 Serial, 1Parallel					
Hard Disk Access Time:	330MB 15Mbit/se	200MB 15ms	120MB 19ms	80MB 17ms	52MB 17ms	40MB 28ms
Controller	32 bit SCSI EISA Bus	IDE 32K Cache	IDE 64K Cache	IDE 32K Cache	IDE 64K Cache	IDE 1:1
Floppy Drive:	1.2MB or 1.44MB, (2nd Floppy Drive Option)					
Video Board:	Orchid 1MB	Orchid 1MB	Orchid 1MB	512K VGA	256K VGA	256K VGA
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Resolution	1024x768	1024x768	1024x768	1024x768	640x480	640x480
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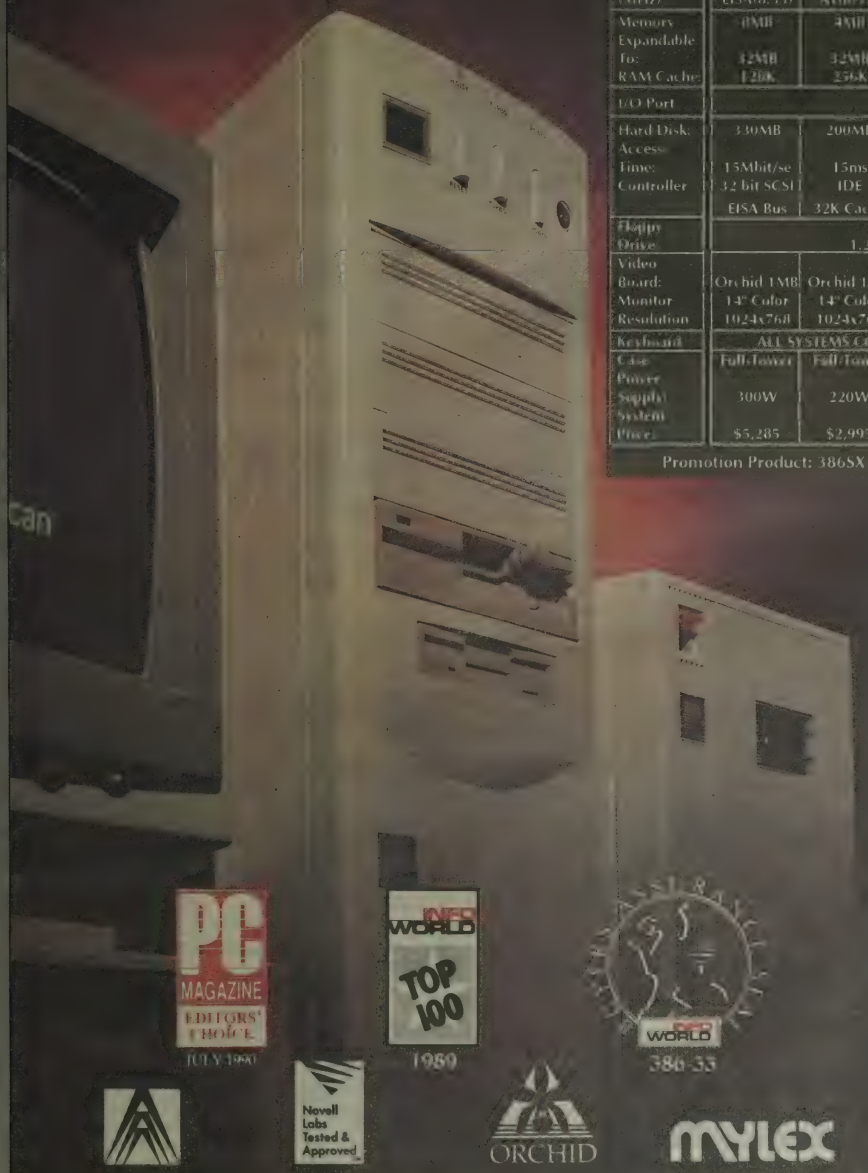

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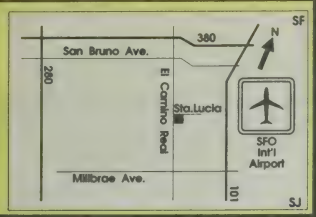

dent Bill Joy cited memory as a key factor in the rapid changes of the last decade, and a driving force in making the connected computing of the '90s different from computing of the '80s.

In the last decade, memory has gone from being an expensive spice to a cheap staple. A megabyte costs under forty dollars today. Four megabyte SIMMs are readily available, and sixteen-megabit chips are well along in their development. Joy predicted that "at least" 256-megabit chips will be available by the year 2000. He further maintained that, were it not for the state of the economy, we would have gigabit chips by then.

Joy explained how these increases have been driven by software. For example, he said, UC Berkeley sent out its first complete UNIX system for the DEC VAX in 1979. Not counting device drivers, it included about three hundred thousand lines of code. Today, a UNIX system includes about 2.5 million lines of code—with much of the increase due to about a million lines of networking code and another million for the user interface. In the next few years, multimedia will also be integrated into operating systems. According to Joy, these developments will require something like two million lines of code. Other interfaces like pen-top displays, voice input, and artificial reality may add more.

Incidentally, the other factor Joy cited was the speed of microcomputers. "Micros got faster than the average minicomputer in 1980, and they've only continued to accelerate," he said. The fabrication skills that will produce the future's incredibly dense memory chips will also dramatically increase the speed of processors. According to Joy's presentation, today's 20-MIPS processors should be replaced by 1000-MIPS technology by the turn of the century. It's easy to imagine that kind of processing power leading to applications with enormous memory appetites.

Even mass-market technology is beginning to show the voracious propensities of software. Microsoft recently held a series of Windows Technical Workshops around the country. One point that was emphasized over and over during the workshop held at the Disneyland Hotel in Anaheim was the importance of increasing system memory as a means of improving Windows performance. "Windows on an 80286 with five megabytes of RAM will outperform Windows on an 80386SX with one megabyte," said Windows program manager Tom Anderson, one of the Microsoft gurus who hosted the workshop. (Note that part of the SX's disadvantage comes from its inability to run enhanced mode with only a megabyte.) Improvements, he said, are available all the way up to sixteen megabytes—the limit imposed on Windows by the sixteen-bit DOS operating system.

ADD-ON MEMORY—AN EXPLOSIVE NEW MARKET

Nonetheless, computers are still largely sold with little memory. "The problem with the system houses is that they have to compete on basic list prices," says David Sun, vice president of development at Kingston Technology Corporation.

Irvine-based Kingston claims to be the largest manufacturer of proprietary memory upgrades. The company sells memory products intended only for end-users, not the OEM market, and they sell only compatible replacements for proprietary modules, not commodity 30-pin SIMMs. However, the company more than makes up for this gap with its range of offerings—some 350 different modules for personal computers, laser printers, laptop and notebook computers, and powerful workstations.

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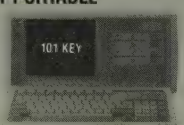

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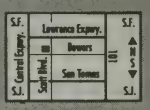

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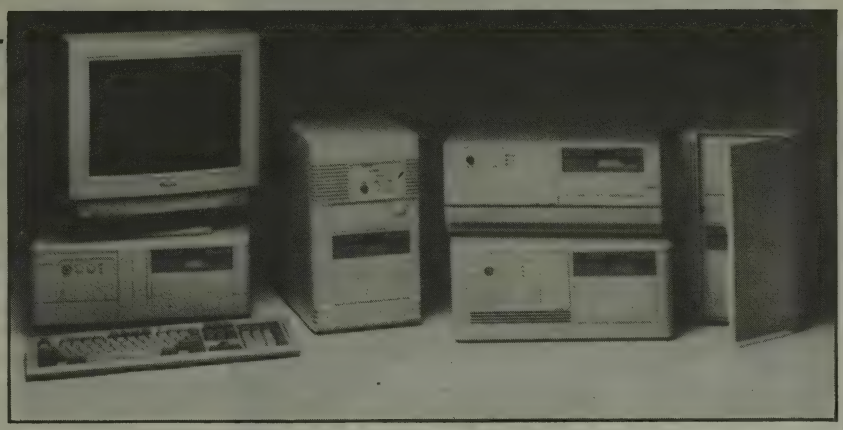

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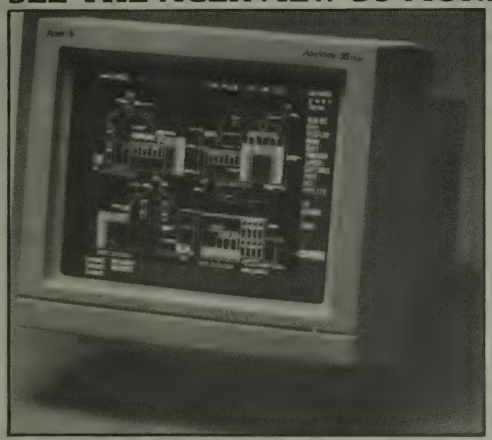

When compared to the reputed NEC Multisync 3D, ther AcerView 35 monitor comes out on top. The AcerView offers resolution at 1024 x 768 non-interlaced with a Sony Trinitron tube, while the NEC 3D is interlaced. The AcerView can support all graphics modes up to Ultra VGA, the NEC only to SUPERVGA. The crystal clear .26mm dot pitch of the AcerView 35 outruns the .28mm of the NEC 3D.

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much of the market's forthcoming memory hunger. "After they sell the system it becomes Kingston's, or our competitor's, job to upgrade the system to full use," says Sun. "The average machine is still less than one megabyte. SX machines are normally shipped with two megabytes. If it's a '486 machine, they normally ship with four megabytes.

Corporations like Arthur Anderson and Price Waterhouse specify Kingston parts by name. "The purchasing managers from many Fortune 500 companies specify that they want either the original manufacturer or Kingston," says Kingston's president John Tu.

"In the next two or three years, memory will at least double if not triple. Just to run Windows, I think you need four megabytes; any time you add another window, it's another one or two megabytes. If you open up four or five windows, it's very easy to use ten megabytes."

Fortunately, memory is getting more efficient, more reliable, and cheaper, at a pace almost faster than new applications can create the demand for it. The next generation of 16Mbit chips will provide all of these benefits—in the not-too-distant future (see sidebar).

COMPETITION, VALUE-ADDED, AND WINDOWS OF OPPORTUNITY

Prices will fall as production increases, and eventually, 16MB modules will join their predecessors as commodity parts that users can easily afford. Markups on commodity parts are only about 10%. But by the time 16MB SIMMs have become a commodity, Kingston and the competitors in its markets will be looking for new products to sell. These companies have become successful without competing on price.

"We used to be in the commodity business," says Kingston president John Tu. "We started the company four years ago, by seeing an opportunity to manufacture standard SIMM modules. In 1988, there was a tremendous shortage of surface-mount memory chips. We were the first company to come up with the idea to replace these chips with standard 1Mx9 DRAMs.

"But now we're not pushing it. We are focusing on the proprietary memory. For example, the PS/2, the Compaq, the Toshiba. As far as these proprietary memories, we are the biggest."

Instead of competing on price, Kingston offers its broad product line and special services for its distributors and customers. "Selling anything, you have service, quality, and selling price. Service and quality are what we're really good at," says Sun. The company provides pre-sale service as well as help after the sale. If you need to know which module to buy, Kingston can help you choose the right product as easily as they can tell you how to install it. Kingston also offers its customers and resellers a configuration guide that lists modules for all of the applications it supports.

"Our salespeople will be able to answer your question," says Sun. "If they cannot answer your question within thirty minutes, they will call you back and say, 'I'm still working on it.' The pre-sale is very important.

"After you do the pre-sale, the after-sale is also very important. If you have a problem, if there's a misunderstanding about the part number, we always take the part back. Every part we ship has the Kingston logo. So we don't ask for a tracking number. We don't ask for anything. If the logo is on there, we take the part back."

"The best thing about doing business with Kingston is that there's no surprises. The quality is consistent," adds Tu.

So far, the strategies of specialization and emphasis on service and quality have proven successful, not only for Kingston, but for at least one of its competitors. "The key to surviving in this business is to be one step ahead of your competition," says Dianne Prittie.

Prittie is director of marketing for Apricorn, a major manufacturer of upgrade modules for portable computers, in San Diego. "For example," she continues, "we had the first LTE credit-card memory on the market, but right now you can buy it from Hitachi, Texas Instruments, and Toshiba, to mention a few. We can't sell the same numbers that we sold. So now we're into the next new product. We have found a way to be competitive on the LTE 386 four-meg memory. The longest we have to capitalize on a new part is two to three months."

Apricorn is also currently leading in the introduction of credit-card memory upgrades. The company's quality has earned it recognition even from Toshiba, which has included Apricorn modules in a catalog of products recommended for its laptop and notebook computers.

Apricorn started in 1983 making interface cards—principally for Apple computers. When offshore competition began to make that business less attractive, president Paul Brown decided to follow the pattern of PS Systems, another company in which he is a major investor. PS Systems had won 95% of the market for sampling-keyboard memory upgrades by undercutting the high margins of keyboard vendors with a quality product. Brown saw a parallel in the price of memory from laptop vendors, and decided that here, too, there was more than enough margin for a quality product.

"We imagine that we're Toshiba," he says. "We need the quality to be as good as Toshiba would have it, or better. That's the focus we always have on the product. The four-layer boards cost more. The new parts cost more. We put on more decoupling capacitors. We just never skimp."

Apricorn makes all of its modules with four-layer boards, as does Kingston. "A four-layer board," says Brown, "separates power and ground from the signals. On a two-layer board, all your signals are on the top and bottom of the board, so you have to mix your ground and power with your signal lines. On a four-layer board you have the luxury of taking two internal layers and making one of them plus-five volts and the other ground. That provides an extremely good connection to each chip, because each connector is essentially a giant, flat plate. You can connect anywhere on that plate and get a perfect low-inductance path to your circuit. It also tends to shield and cut down digital noise. If you take a little line on a circuit and pulse it up and down at a couple-of-megahertz rate, it will generate noise that will be picked up by other wires or traces.

"But if you put that signal very close to a big, flat ground plate, it will cut down the induced electromagnetic field. As a result, all the pulses and all the signals on a four-layer board are really clean. On a two-layer board, you're going to see the transitions are a little sloppy, or you're going to see a little noise riding along the high and the low levels. In most cases, it doesn't cause a problem. A good two-layer design can work just as effectively as a four-layer board. What a four-layer board does is give you insurance."

The cost of this technology is one of the

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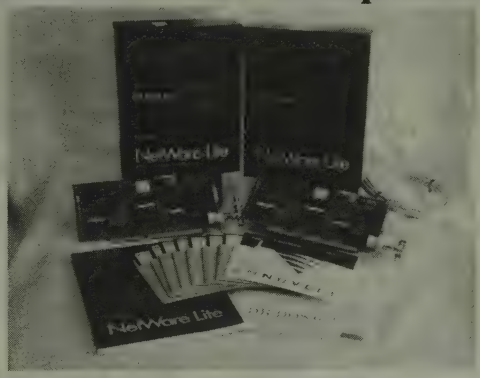

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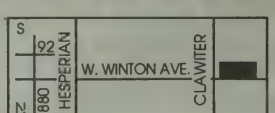

reasons that neither company competes against the price-oriented companies in the commodity market.

Apricorn originally made only laptop memory, but it is now branching out into SIMMs for other proprietary systems, and competing more directly with Kingston. In addition to its strong commitment to quality and service, Apricorn offers a lifetime warranty as an advantage over the five-year warranty that Kingston offers on most of its modules. (Kingston's workstation modules also carry a lifetime guarantee.)

One of the latest entries into the memory-fabrication business is Sunnyvale's 50/50 Micro Electronics. The company began business just this past February, and it has already done some $10 million, according to company president Barry J. Lebu. 50/50 also eschews price competition, but it doesn't do it by competing with specialized or low-volume products.

Instead, the company has targeted the mass market for commodity memory sales that are currently being bundled with technical support. However, 50/50 is offering a product that includes materials to support the user's own installation efforts. Of course, there are already many vendors aiming at the do-it-yourself market, but Lebu isn't after the technically competent buyers that he says have composed this segment to date. To reach the unsophisticated consumer—the ones who would otherwise have to pay someone to install their memory—50/50 has developed a marketing program for mass retailers like Price Club and Costco. Lebu estimates this segment at "90% of the potential market."

For now, Kingston remains comfortably ahead of Apricorn, 50/50, and all the others. Corporations like Arthur Anderson and Price Waterhouse specify Kingston parts by name. "The purchasing managers from many Fortune 500 companies specify that they want either the original manufacturer or Kingston," says Tu. "So we have become a brand name." Kingston is also branching out into processor upgrades (SX/Now!) and storage subsystems.

Kingston started doing business in March of 1988 on $20,000 of seed money, and did $13 million that first year. Sales in 1989 were $36 million; in 1990, $87 million. For 1991, Kingston is conservatively projecting $130 million in sales. Its new 25,000-square-foot facility was purchased for cash, and the company has no long- or short-term debt. Partners Tu and Sun have no interest in going public.

Tu gives much of the credit for Kingston's success to its eighty employees—calling them the "greatest people in the world." They are certainly among the most productive. Each is generating about $1.2 million in gross revenue. The employees, for their part, seem to hold Kingston in equally high esteem. During the company's entire history, not one has quit. ■

Continued on page 258

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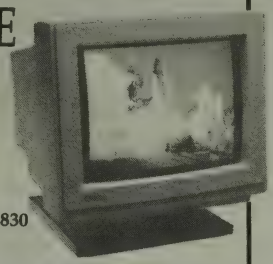
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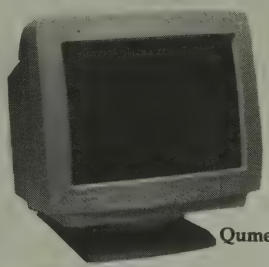
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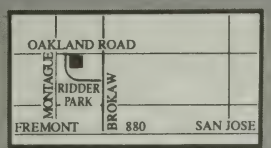

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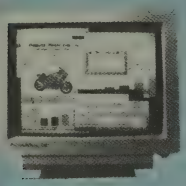

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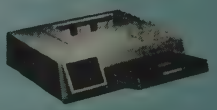

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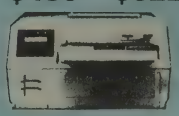

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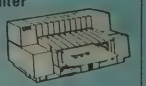

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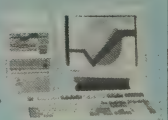

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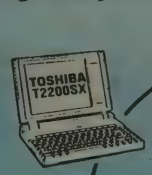

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- Backlit Triple Supertwist LC Display with VGA emulation
- True Notebook size (11"x8.5"x1.4")
- Weighs only 4.4 lbs.
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- 20MB Hard Disk Drive

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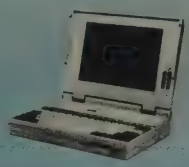
- 80386 SX/20 Processor
- 30MB/60MB HD
- 2MB RAM (up to 10MB)
- Edge Lit VGA 32 Shades



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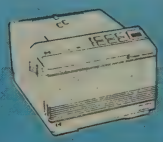

- Superior 300-dpi print quality
- PCL5 allows you to scale type to thousands of sizes
- All the HP LaserJet III printer features in a compact size and at a low price
- Prints fonts, graphics and complex documents faster than other laser printers in its class

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LaserJet III Printer

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- More fonts and scalable typefaces
- LaserJet compatibility protects your software investment

HEWLETT PACKARD

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- Fast 17-ppm printing
- 300DPI resolution
- HP PCLS language
- Networkable

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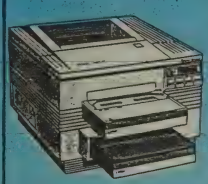
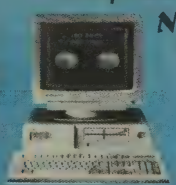
LaserJet III D Printer



- Advanced paper-handling
- Resolution Enhancement for the best 300-dpi printing
- Ideal for high-volume, multi-user environments
- Wide variety of easy-to-use, scalable, built-in typefaces
- Optical envelope feeder handles 50 envelopes

Now prices are lower than ever!

NEC PowerMate® SX/20



Featuring a 20MHz microprocessor, 2MB (70ns) RAM, the NEC Concurrent Bus Design, and a vast selection of storage, graphic and peripheral options the PowerMate SX/20 offers superb performance in a beautifully engineered machine.

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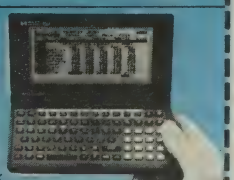

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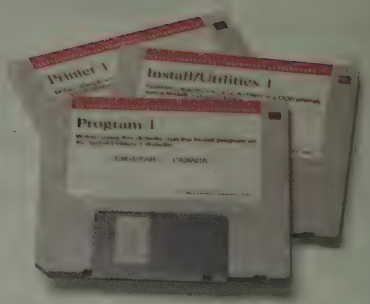

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AX Conference Woos US Software Developers For Japanese Market

AX Conference 1991

October 27–29

Dunfey Hotel, San Mateo, CA

It's no secret that Japan offers a potentially rich market for software developers, but while some large US vendors (e.g. Lotus and Ashton-Tate) have achieved considerable success, smaller developers have encountered significant barriers.

A key problem is the large number of conflicting, proprietary microcomputer platforms, a condition that makes it prohibitive to offer versions for each manufacturer's machine. Market leader NEC's hardware includes proprietary features very different from the IBM AT platform, and even English-language software must be extensively modified to run on it. The market fragmentation is so severe that the Macintosh—one platform, one set of applications—is enjoying huge growth in Japan since the release of the KanjiTalk operating system.

In response to this situation, some leading Japanese hardware vendors teamed up with Microsoft's Japanese organization, Microsoft K.K., to create a standard hardware specification for Japanese IBM-compatible computers in 1987. The standard became known as AX (for Architecture eXtended). The AX Consortium now has over 600 members, including Sanyo, Mitsubishi, Sharp, Canon, Sony, Oki, Kyocera, Acer, Yokogawa Hewlett-Packard, DEC, Hitachi, Intel, and Microsoft. According to the AX Consortium, almost 14% of the personal computers shipped in Japan this calendar year have been AX machines.

AX computers can run English-language PC applications with far less alteration than is necessary for other platforms. Localizing applications usually requires only that the programmer build in support for the Japanese double-byte character set—extensive rewriting for proprietary hardware has been eliminated. To make the process of developing software for the AX even easier, the consortium now offers the AX/VGA software driver, which transforms a 386 computer with VGA into an AX machine, with no hardware modification.

The AX Consortium will be hosting its second annual AX Conference in San Mateo at the end of October. Sessions will cover both technical and marketing issues. For registration and other information, call Pacific Software Publishing, Inc., (206)232-3989; fax (206)236-8102.

Conference Schedule

Sunday, October 27—Orientation

Monday, October 28

9 am–12:30 pm

Marketing Seminar—Insights on Key Issues

- Marketing overview, marketing issues, and the cost of doing business in Japan
- Distribution channels and how to structure distribution agreements
- Product development, support, and legal issues
- Update on MS Windows 3.0J and Novell NetWare 386J in Japan

9 am–4 pm

Technical Seminar for Developers

- Double-byte character support for DOS applications
- Using the Japanese front end processor for DOS applications
- Japanese programming requirements—date/time formats, sorting, language rules, Japanese user preferences
- Device control

1:30 pm–6 pm

Executive Conference for US and Japanese Attendees

- Meet face-to-face with Japan's PC vendors and distributors
- Demonstrate your products and begin negotiating distribution contracts

Breakout Session—Presentation of New Products

- Microsoft K.K.: MS Windows 3.0J for AX, DOS 5.0J
- Novell K.K.: NetWare 386J for AX
- AX Consortium: AX VGA/S system for AT 386 compatibles

Tuesday, October 29

9 am–5 pm

Executive Conference Continues

- Private meetings between Japanese and North American attendees
- Breakout meetings with representatives from Microsoft K.K., Novell K.K., SoftBank Japan, and others. Topics will include Japanese font support, realistic entry strategies, PEN Windows, Multimedia Windows, and the LAN market in Japan

9 am–4 pm

Technical Seminar for Developers

- Localizing MS Windows 3.0 applications
- Supporting Novell NetWare 386J for AX

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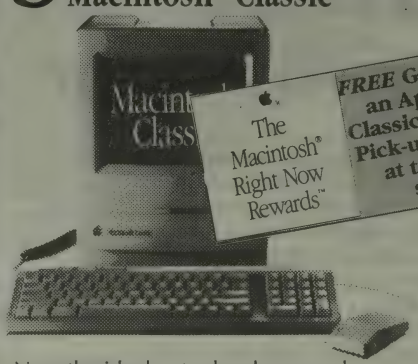
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FREE Gift For Purchasing an Apple® Macintosh® Classic® or Macintosh LC. Pick-up your order form at time of purchase.
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Now the ideal entry level personal computer is more easily affordable than ever. Purchase the Classic 2/40 with 2 MB RAM and 40 MB hard drive, and either an Apple® StyleWriter® or Apple Personal LaserWriter® LS and receive a $125 Instant Rebate towards your purchase.

Macintosh Classic 2/40 $1199
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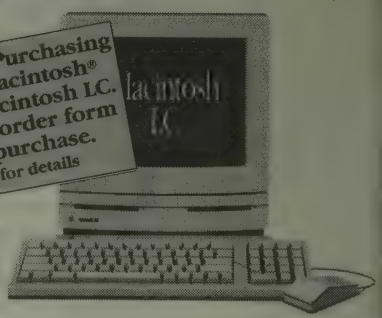

The Macintosh® Right Now Rebate™ means now is the time to purchase the most affordable color solution in the Apple® line. The LC's solid performance makes it an excellent choice for educational and business use. Purchase the Macintosh LC with an Apple 12" RGB Display or a 13" AppleColor® High Resolution RGB Monitor and either an Apple StyleWriter® printer or and Apple Personal LaserWriter® LS and receive a $350 Instant Rebate from Apple.

Macintosh LC 2/40 $1699
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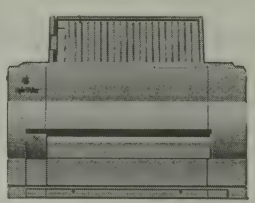
Monitor extra. Keyboard extra on some models



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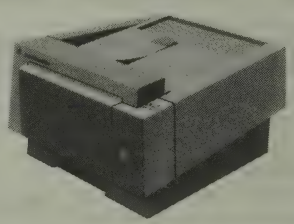
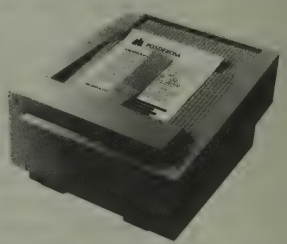
The StyleWriter® exemplifies the ingenuity of Apple® innovation & affordability. Apple brings outstanding laser-like quality results, quiet operation, and space saving compact design for only a fraction of the cost of a laser printer. Compatible with all Macintosh® computers.



Apple® Personal LaserWriter® LS

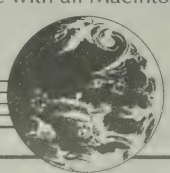
The new personal LaserWriter® LS printer is the most affordable personal laser printer from Apple®. It's compatible with all Macintosh® computers.



Apple® Personal LaserWriter® NT

The Personal LaserWriter® NT offers individuals and small workgroups affordable, high-quality PostScript® laser printing in a compact design. This printer has a built-in AppleTalk® interface for Macintosh® computers.

*** Rebate applied after sales tax.**



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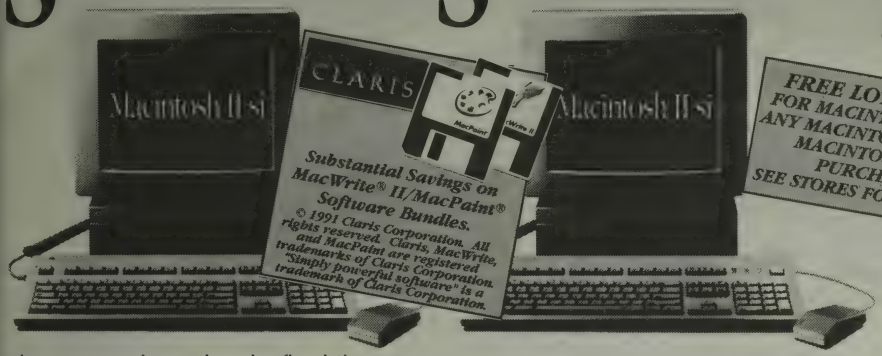
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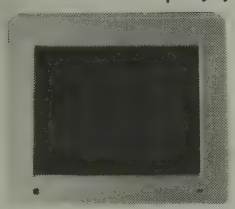
Macintosh IIsi 5/80 $3149
Less $800

Monitor and keyboard extra. **$2349 Net***



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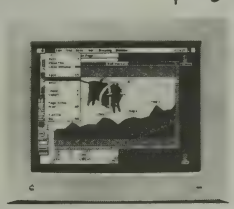

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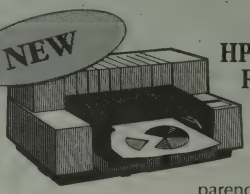

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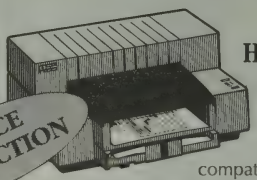

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Hewlett-Packard's DeskWriter printer, now AppleTalk® compatible, brings laser-like quality to the Macintosh® line.

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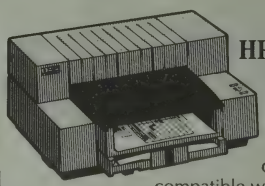

HP DeskWriter C Printer

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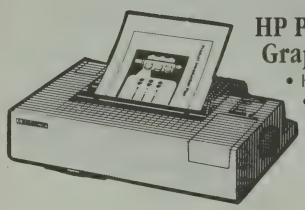

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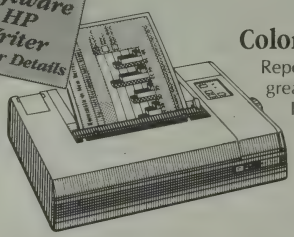

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Reports and presentations achieve their greatest impact in color produced by the HP PaintWriter printer. Prints on paper or transparency for maximum versatility. Compatible with Macintosh® color computers.

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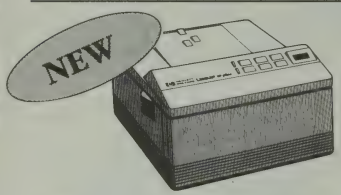

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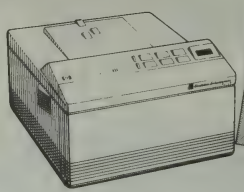

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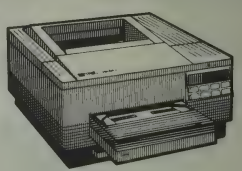
• PostScript® options for PC or Macintosh ®



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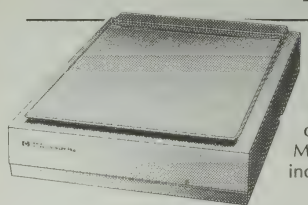
• AppleTalk® compatibility with optional interface
• Dependable HP performance.

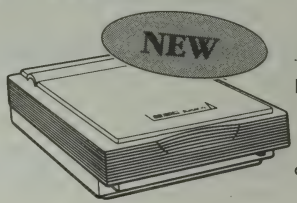


HP ScanJet Plus Scanner

• 256 grey scale levels (8 bit) for high-resolution images • Wide range of contrast & intensity control • PC or Macintosh® compatible • Price includes interface.

1149.

NEW

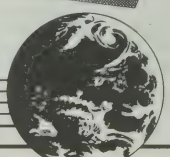


HP ScanJet IIc

The new HP ScanJet IIc gives you 256 levels of gray or 24-bit color professional quality documents. Supports IBM AT-compatible PCs, MicroChannel or Macintosh® personal computers.

Starting At 1495.

Price includes interface



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(408) 554-8300

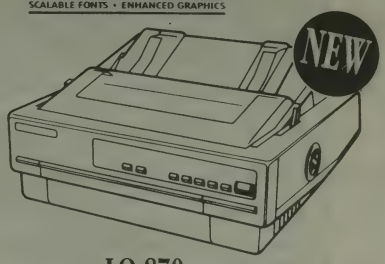
EPSON®

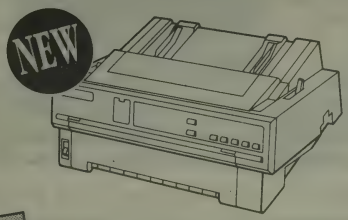
ESC/P2™ EPSON SCALABLE FONTS • ENHANCED GRAPHICS

LQ-570

This new 24 pin printer utilizes scalable fonts, enhanced graphics and advanced paper handling to offer more performance than any printer in its class at an affordable price.

299.





LQ-870

This new 24 pin printer is a major step forward in printer technology with high speed, and high performance that sets a new industry standard for quality with scalable fonts.

489.

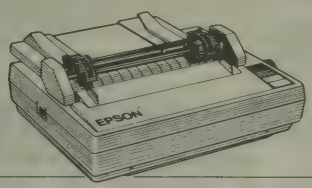
LQ-1170 Wide Carriage Model.....699.

TWO YEAR WARRANTY ON ALL EPSON PRINTERS

LX-810

- 9 pin • SmartPark™ paper handling
- 200 CPS super draft • 30 CPS NLQ
- High resolution graphics.

159.



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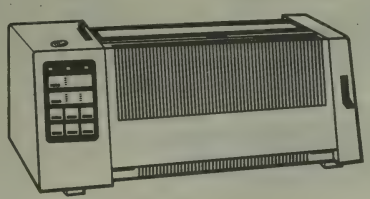
NEW PRINTERS FROM IBM®

IBM® PPSII 2380

IBM introduces 2 new 9 pin printers that can print crisp, six -part forms and thick paper stock with no problem using straight paper path technology. Solid and reliable, these printers perform flawlessly.

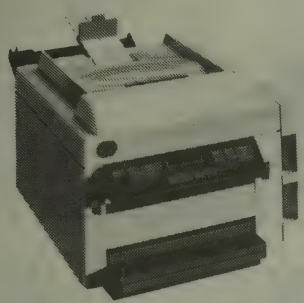
2380 Narrow Carriage .....349.
2381Wide Carriage.....499.



IBM® PPSII 2390

IBM introduces 2 new 24 pin printers for letter quality printing at high speed. Durable and reliable, these printers feature a straight through paper path with multiple feed options.

2390 Narrow Carriage .....359.
2391Wide Carriage.....509.



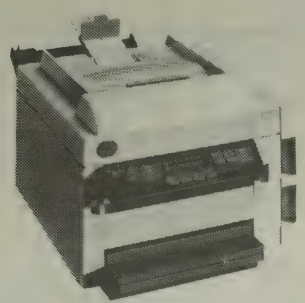
IBM® LaserPrinter 6

6 pages per minute
Model 4029020

1495.

IBM® LaserPrinters 6 & 10

At 6 or 10 pages per minute with Print Quality Enhancement and Scalable Fonts, these printers outperform the rest. Paper handling includes a 200 sheet input tray with optional 500 sheet drawer and 75 piece envelope feeder. When you add the optional PostScript™ and 4 MB of memory this printer provides the most affordable 600 x 600 dots per inch technology available today. HP PCL4 compatible and optional PCL5.



IBM® LaserPrinter 10

10 pages per minute
Model 4029030

1795.

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- Affordability....
- 110% Price Protection Program...
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Bring It All Back Home with the IBM® PS/1™ 386SX

The new IBM PS/1 386 SX achieves the exceptional. A home machine with the power of a business model, this computer operates at 16 mhz with 2 MB's of RAM. A 40 MB hard drive stores all your essential data. Comes complete with VGA PhotoGraphic™ color display, keyboard, mouse and built in 2400b modem. Plus you get IBM DOS, Microsoft Works® and 3 months FREE Prodigy for on line home shopping, banking, travel arrangements and more.

1295.

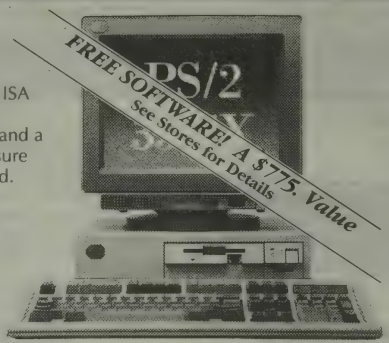
PS/2 NOW AVAILABLE IN ALL STORES

IBM® PS/2® 35sx

Based on an 80386sx processor operating at 20 Mhz, this latest model IBM PC offers the classic ISA buss allowing easy upgrades at reasonable cost. 2 MB of RAM and a fast 17 MS 40 MB hard drive insure top performance. VGA on board.

Monitor extra.

1649.*



IBM® PS/2® 40sx

For more expansion capabilities step up to the PS/2 40sx with 5 slots open. VGA hard drive controller and I/O are all on the motherboard. 2 MB's of RAM come standard with up to 16 MB maximum on the system board. An 80386sx operating at 20 Mhz speeds every operation along.

Monitor extra.

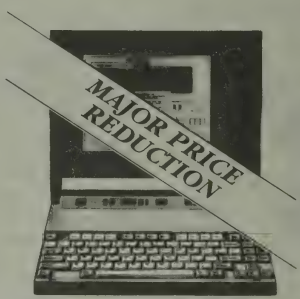
1895.*

IBM® PS/2® 55sx

IBM's best selling PC is now available at a very special price. 2 MB's of RAM, VGA on board and a 30 or 60 MB hard drive make this system a hot home or home office unit.

Monitor extra.

STARTING AT **1595.**



IBM® PS/2® L40sx

Full featured, fast and flexible, the L40sx is IBM's new no compromise notebook PC. 2 MB of RAM expandable to 18 MB , VGA display, 20 Mhz 80386sx processor and 60 MB hard drive make this system an outstanding choice for the business traveler.

2999.

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** After manufacturer's rebate with purchase of IBM DOS 5.0 of OS/2.*

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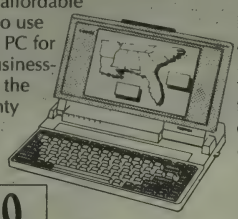
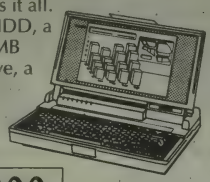
Toshiba's affordable and easy to use Notebook PC for today's business-person on the move. Plenty of comfortable features.



599.

Toshiba T1000LE

Toshiba's 6.5 pound notebook PC that has it all. A 20MB HDD, a 3.5"/1.44MB floppy drive, a terrific display and keyboard.



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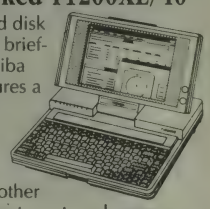
Power Packed T1200XE/40

Carry 286 hard disk power in your briefcase. The Toshiba T1200XE features a large, bright display, a comfortable keyboard as well as many other performance features to enhance your productivity.



T1200XE/20 ....1649.

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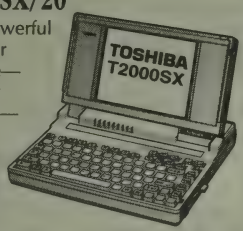
Toshiba T2000SX/20

- Toshiba's most powerful notebook computer
- High performance—386SX™ processor
- Super ergonomics—only 6.9 lbs.



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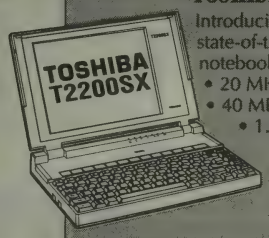
Toshiba T2200SX/40

Introducing the T2200SX—state-of-the-art features in a 5.5 pound notebook format!

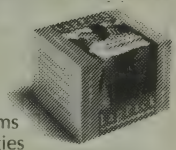
- 20 MHz, 386™SX processor
- 40 MB or 60 MB hard drive
- 1.44 MB diskette drive
- 2 MB RAM expandable to 10 MB • VGA display with 16 gray scales



3599.

RUPP CORPORATION

FastLynx LapPack



Ten highly acclaimed software programs in this total utilities solution for laptop/desktop connection.

FASTLYNX LAPPACK is a trademark of Rupp Corporations.

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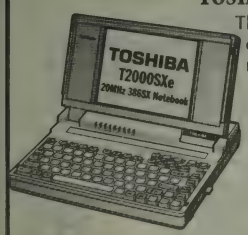
**Cables Included*

TOSHIBA DESKTOP REPLACEMENTS

Toshiba T2000SXe/60

The Toshiba T2000SXe/60 offers advanced features required by business and professional power users. Time now to replace your desktop.



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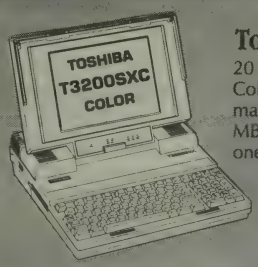
Toshiba T3200SXC

20 MHz 80386™SX CPU. Color TFT-LCD active matrix VGA display. 120 MB hard disk drive. See one in our Berkeley Store.



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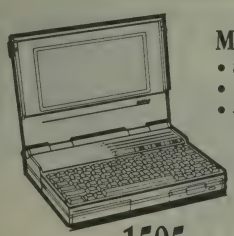
Put the total Windows™ computing solution to work for you.

Get the business-productivity essentials. Get a **T3200SXC** running The Microsoft® Office for Windows™

COMPAQ LTE/286 COMPAQ COMPAQ LTE 386s/20

Model 40

- 8.5" x 11" & only 7 lbs.
- 1.44 MB floppy drive
- 40MB hard drive



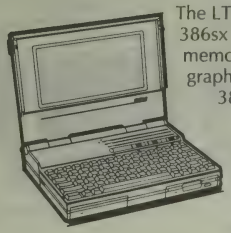
LTE 286/20 **1595.**

1795.

LTE/20 **1395.**

Power without the Pounds

The LTE 386s/20 uses a 20 mhz 386sx processor with cache memory design and a 16 bit graphics controller, the LTE 386s/20 packages this optimal performance in a 8.5 by 11 inch PC weighing 7.5 lbs.

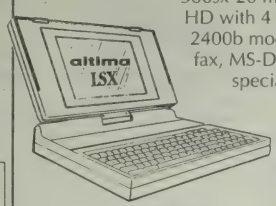


Starting At **3495.**

altima LSX

Award Winning

386sx-20 mhz, 60 MB HD with 4 MB RAM, 2400b modem/send fax, MS-DOS 5.0 and special software collection consisting of six titles.



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WEA Computer Systems CPUs Keyboards and Compatibles

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2 year Monitor Warranty. Extension from $49....

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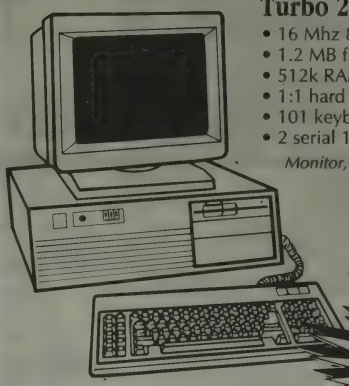

Turbo 286 16

- 16 Mhz 80286
- 1.2 MB floppy
- 512k RAM
- 1:1 hard drive controller IDE
- 101 keyboard
- 2 serial 1 parallel port

Monitor, display card extra

499.

386SX

- 16Mhz 386SX
- 1 MB RAM
- 1.2 MB floppy
- 1:1 hard drive controller IDE
- 101 keyboard
- 2 serial 1 parallel port

595.

FREE SOFTWARE "Night Shift" by Lucasfilms ™ Games FREE with Purchase of a Complete* VGA ComputerSystem. Offer good while supply lasts. *CPU and Monitor

386/33 Mhz

- 1 MB RAM
- 1.2 MB floppy drive
- 1:1 hard drive controller IDE
- 64k cache
- 101 keyboard

895.

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WEA 486-33 Standard

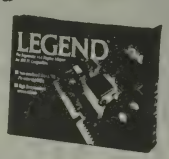
• 4MB RAM upgradable to 8 MB on motherboard; • I/O, 1.2 MB FD, 101 keyboard • 1:1 hard drive controller IDE • Desktop case • AMI BIOS • 64 K RAM cache, upgradable to 256K • 1-32/8 bit slot • 6-16 bit slot • 1-8 bit slot • Weitek math co-processor socket.

1999.

Ad expires 11/30/91. Limited to stock on hand. Errors subject to correction.

SIGMA DESIGNS

Sigma VGA Legend

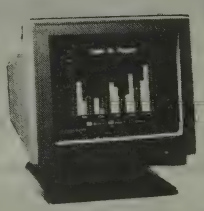


- 1024 x 768 • 16 colors
- Interlaced or non-interlaced
- No switches or jumpers
- 512 K video memory upgradable to 1 MB
- Exceeds European ergonomic standards for flicker-free displays
- Upgrade kits in stock (VGA CARD ONLY)

219.

Leading Technology 12" Amber Monochrome

- Non- glare • 720h x 350v with tilt & swivel and cable



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Leading Technology 1480A

- 14" amber flat screen 720h x 350v with tilt and swivel.

119.

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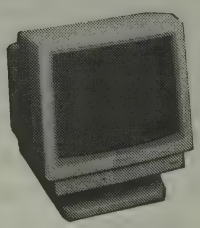
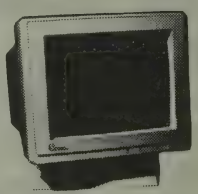
QUANTUM (SCSI) LPS105S3.5 105MB	579.



Leading Technology 1458V

14" analog multi-frequency 640 x 480, .51 mm dot pitch

299.



STANDARD TECHNOLOGIES

STA-428I

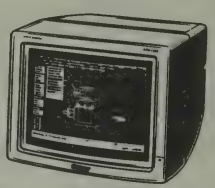
- 14" Super VGA color
- .28 dot pitch
- Includes tilt & swivel base
- 1024 x 768

349.

SONY

Sony 1320 VGA

- VGA color monitor
- Analog input
- .25mm aperture grid



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SONY

Picture Perfect

Ideas spring to life in sharp vivid color on this advanced Sony monitor. Sony combines non-interlaced technology with a super fine pitch grille to achieve sharper images without flicker. Compatible with Macintosh.

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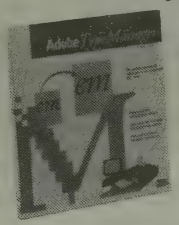
Adobe Systems Incorporated

Adobe TypeManager



No More Jaggies

Now you can have crisp, clean-looking text automatically. At any point size and in virtually any 3.0 program.

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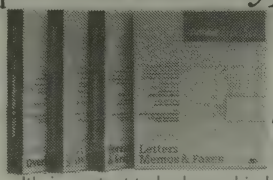
Adobe TypeSet For Business



The Right Type for the Job

It's important to look good in business, and using the right type can help you stand out. But how do you know if a certain type is your type? That's why we created four new Adobe Type Set® packages for business: Letters, Memos & Faxes; Overheads & Slides; Invitations & Awards; and Spreadsheets & Graphs. They make it easy to communicate more effectively.

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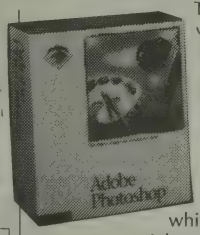
Imagine What You Can Create



Then create exactly what you imagine. That's the incredible power of Adobe Photoshop™ software. With Adobe Photoshop and your Macintosh®, you can create and produce color and black and white images, right at your desk.

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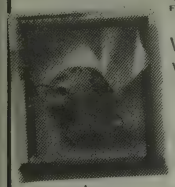

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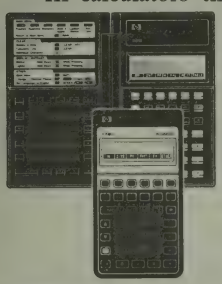

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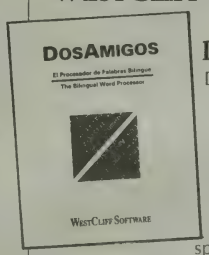

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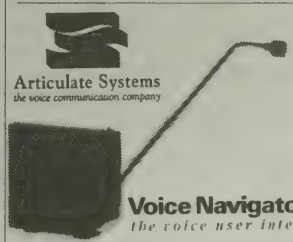

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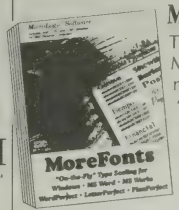

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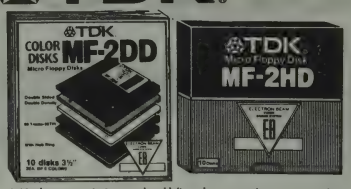

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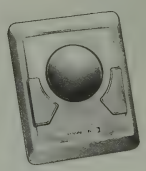

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Why You Can't Get It Today

The Unexpected Pitfalls Of Cross-Platform Software Development

BY PAUL HOFFMAN

Way back in 1984, Apple introduced the Macintosh computer to a skeptical world. Many programmers who investigated writing Macintosh programs said, "It'll never fly." "You can't write software for this thing." "It will be impossible to port programs from the IBM PC to the Mac." Many people in the computer industry believed them and promptly declared the Macintosh a dead machine. Of course, many of those same people now have written Macintosh programs and proven themselves wrong.

What did Apple do to incur this wrath? They designed the Macintosh operating system in such a way that programmers had to follow a prescribed set of rules for the user interface, memory management, keyboard access, and dozens of other things that programmers thought should be left as open issues. Apple forced people who wanted to write Macintosh programs to keep track of literally hundreds of things that they could easily ignore on the IBM PC. In this way, they ensured that any programs that were written for the Macintosh would look the same and would be able to cooperate.

The dual concepts of a standardized user interface and cooperation among programs were completely foreign in 1984. The IBM PC market (the clones had not made significant inroads then) was characterized by programs that looked very different and rarely communicated except through kludges. Programmers were able to turn out programs faster when they didn't have to worry about these things. When Apple touted the new Macintosh scheme, programmers responded that such restrictions were fascist and unnecessary.

Programmers saw the basic problem as the fact that almost every program would have to be rewritten from scratch in order to run on the Macintosh. Before the Macintosh, it was usually not too difficult to make a program written for one operating system work on another (called "porting"). Most programmers asked why on earth anyone should write for a computer with such a strange set of requirements, and many major companies took a long time to enter the Mac market. For years, people made fun of Apple for not giving programmers ways of converting IBM programs to the Mac.

Within a few years, there were millions of Mac owners but still relatively few programs. Companies that could have spent a few programmer-years on creating Mac programs from scratch didn't, much to the consternation of Mac users. Apple had infiltrated many large corporations, but even then the software companies stayed away from the Macintosh because they thought it was ridiculous to create programs from scratch.

WHEN MICROSOFT DOES IT, IT MUST BE OK

During this time, Microsoft was in a quandary. Bill Gates realized that MS-DOS would not satisfy users in the long run, and that Microsoft would have to come out with a new operating system that delivered many of the features and attributes Apple had embraced with the Macintosh. The initial announcement of Windows v1 showed that customers were certainly interested in this kind of new product, but there was no way to introduce it without forcing software companies to do the same thing that Apple was requiring. So Microsoft bit the bullet, announced Windows, and had to live with the same problems that Apple did.

By then, however, many programmers had realized that MS-DOS was not the final frontier on the PC. The only reason that they wrote new software for Windows was that Microsoft assured them that it would run on all PCs and that it would sell a zillion copies once users saw how handy it was. The requirements for writing for Windows v2 (the first "real" version of Windows) were just as restrictive as Apple's requirements for the Macintosh, and only a few dozen programs appeared.

However, the appearance of Windows 2 changed everything in the world of PC software, even if not much software appeared. It sent the unmistakable message to everyone who had written PC programs that porting to new operating systems would be difficult and time-consuming. In fact, many companies discovered that getting a PC program to run under Windows was not really a job of porting, but usually involved almost total rewrite. If they were lucky, the final Windows program would have about 25% of its programming code saved from the PC version.

This disappointing fact helped Apple, since it proved what they had been telling programmers all along: You have to do a total rewrite when you move to graphical operating systems. During the years leading up to Windows 2, Apple had kept improving its base of programming tools (the programs that help programmers create properly functioning applications) while Microsoft had kept everyone else

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out of the Windows market. When it became clear that there was almost no market for Windows 2, companies started to look again at Apple. They wondered whether any money could be made from a closed architecture like the Mac, and saw Microsoft cleaning up in word processing and spreadsheets. Many started developing for the Macintosh, while others decided to try for the Windows market in hopes it would grow.

ALL THE YEARS COMBINE

So where are all those Windows and Macintosh programs that were being ported from MS-DOS?

Many of them are still being written. The microcomputer industry discovered that it takes significantly longer to create programs for graphical operating systems than they ever imagined. Most programmers who work for these companies have fewer than five years of programming experience, and they've never worked on porting projects before. If they had more experience, they would have known enough to tell their bosses to either wait for many years or to be prepared to throw dozens of extra programmers on the project. Most companies did neither.

Even the best-funded companies grossly underestimated how long it would take to write programs for the Macintosh and for Windows. Lotus is a prime example of how not to finish programs. Even though they've been working for years on 1-2-3 for Windows, telling the press they'd have preliminary versions "any month now," it took until August of this year for them to ship the first commercial version. Given Lotus' size and stature, and the pent-up demand for 1-2-3 for Windows, you would think that they might have put a bit more emphasis on getting the product out the door.

Corporations love 1-2-3. They love Lotus. And the ones who also loved Windows were forced to start purchasing Excel more than a year ago so that users would not have to run boring old character-mode 1-2-3 under Windows. Lotus has lost literally hundreds of millions of dollars in profits by not having 1-2-3 for Windows ready when Windows 3 was released last summer. Besides, many companies decided that Excel was pretty darn good and decided to standardize on it instead of waiting an indeterminate amount of time for Lotus.

The initial excitement when 1-2-3 for Windows was finally released was soon dampened when the newsweeklies pointed out two fairly damning features of the new program: It runs much slower than Excel and has essentially no features that are not in 1-2-3 v3.1. Running slower than Excel could almost be tolerated, because speed isn't everything and 1-2-3 has some features that Excel lacks. But most people have come to expect Windows and Mac programs to be feature-laden, and 1-2-3 v3.1 is a tough act to follow. Although sales of 1-2-3 for Windows have been satisfactory at the outset (especially given Lotus's deep discounts for current customers), many people are thinking about whether they should stick with 1-2-3 v3.1. If many or most of Lotus's potential market decides not to go to the Windows version, Lotus may find that it wasted much of its development costs.

Lotus isn't alone in missing the market by a long shot. As of this writing, WordPerfect for Windows is not expected to be out until January of 1992, and has a good chance of missing that deadline too. WordPerfect made the same drastic mistake that Lotus did, underestimating the amount of time it would take to produce a Windows program. WordPerfect has less of an excuse than Lotus does, however, since it had already written a reasonable Macintosh version of WordPerfect, and thus should have learned about the pitfalls earlier.

IF YOU THINK IT'S BAD TODAY, JUST WAIT FOR OS/2, NT, AND PINK

Some of the best software packages for MS-DOS, particularly databases, still haven't shown up on Windows or the Mac. Smaller players with solid niches have indicated that they aren't even going to try to get into Windows due to the cost of programming. They are hoping that the non-Windows MS-DOS market continues to grow or that someone comes up with a panacea programming tool that helps them move their old PC programs to a graphical interface like Windows.

The future is even more grim. Microsoft and Apple will continue to make their operating systems more complicated for programmers. Windows 3.1, due late this year or early next year, has many new pieces that need to be addressed by programmers. This means that almost every Windows program will have to release a new version for 3.1, costing users tens of millions of dollars. The same has been true of Apple's System 7 released earlier this year. When Microsoft and Apple say that old software "should be compatible" with the new operating systems, most programmers laugh, then cry, because they know that's true less than half of the time. Apple has a much better track record with compatibility than Microsoft, but certainly not good enough for programmers.

As you've been reading here in *MicroTimes*, the operating system market is not stagnant. In the next three years, you should expect to see new operating systems from IBM (OS/2 v2, due late this year), Microsoft (Windows NT, due at least three years from now), and Apple/IBM (commonly called Pink, probably around the time of Windows NT). Although each of these will bear some resemblance to current operating systems for programmers, they are sure to have so many differences that it will take even more years for companies to produce software for them. It is the users who will be forced to wait around while the software companies play catch-up with the operating systems.

It doesn't have to be this way. Software companies can start investing now in writing programs for these technologies. A decade ago, the best software companies wrote their own tools to help them create MS-DOS programs because the tools weren't commercially available. These tools helped them create better programs faster than their competition. The art of programming tool-making has moved forward rapidly since then, but few large software companies have made serious investments in them. If Lotus, WordPerfect, and others don't want a repeat of the Windows fiasco, they had better start pouring tens of millions into tools for these operating systems now. Otherwise, users will have to continue to make operating system choices without knowing what programs will be available and when they will show up.■

When Microsoft and Apple say that old software "should be compatible" with the new operating systems, most programmers laugh, then cry, because they know that's true less than half of the time. Apple has a much better track record with compatibility than Microsoft, but certainly not good enough for programmers.

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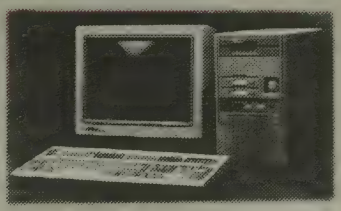

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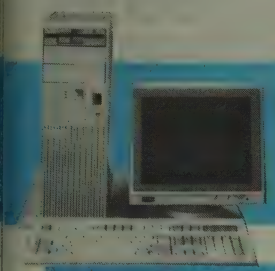

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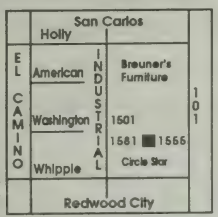

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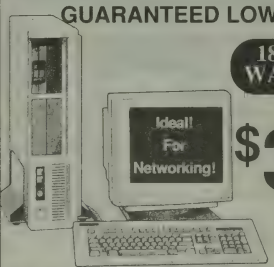

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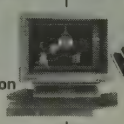

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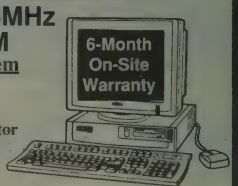

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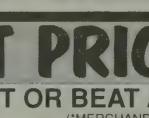

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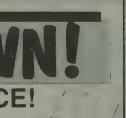

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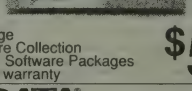

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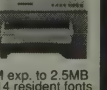

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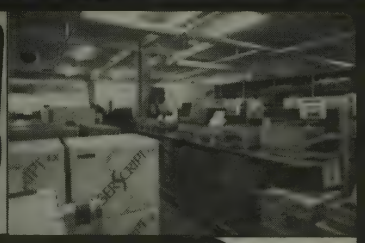

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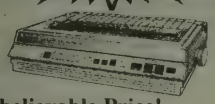

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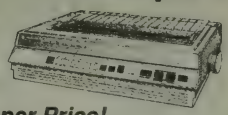

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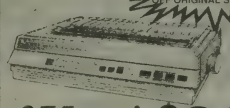

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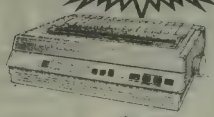

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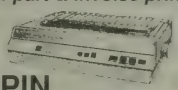

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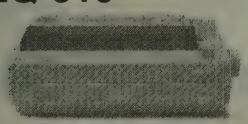

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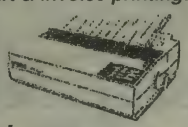

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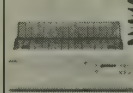

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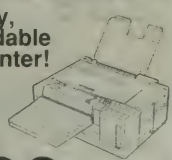

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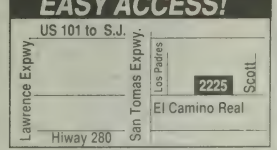

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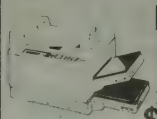

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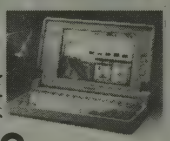

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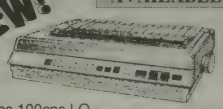

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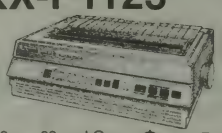

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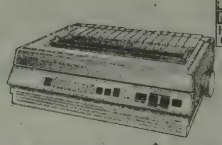

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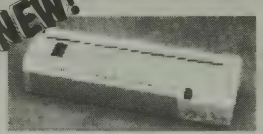

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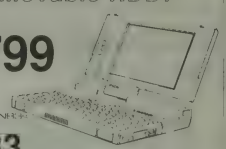

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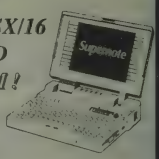

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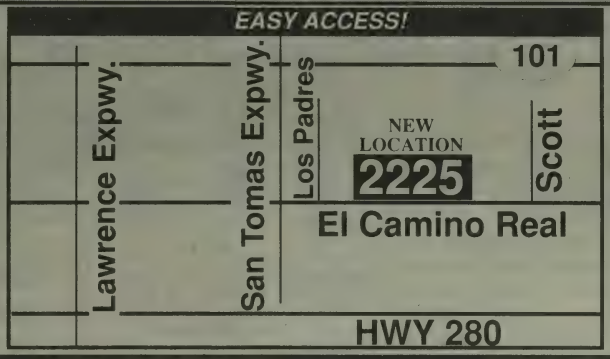

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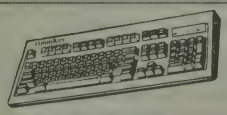

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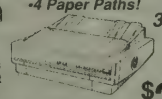

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Adventures With System 7

Part II—Networking And Mac-PC Environments

BY LENNY BAILES

In our last installment (Issue 86N/87S) on System 7 we outlined the enhancements and added features of Apple's new operating system. We weighed the advantages and disadvantages of an upgrade from the standpoints of software compatibility, memory requirements, and disk storage requirements. This installment focuses on System 7's networking capabilities: how to link up with other Macs running System 6 and 7, or connect to MS-DOS machines.

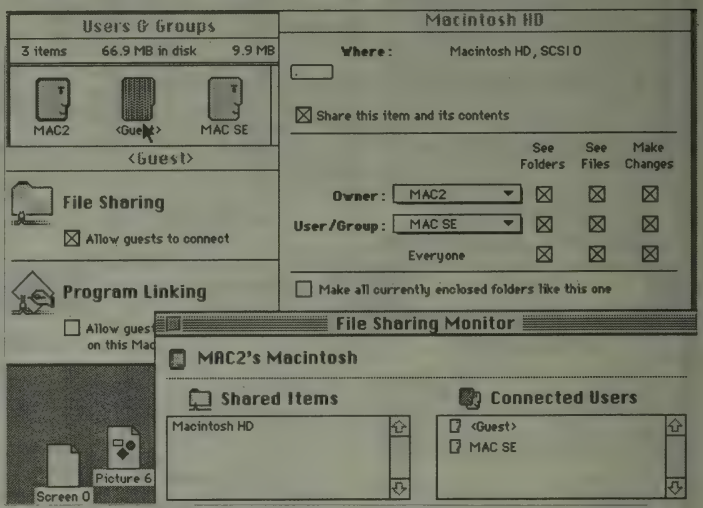
The networking features built into System 7 are powerful and convenient: Any Macintosh running System 7 software may become part of a peer-to-peer network through AppleShare. System 7's networking support includes password protection, multiple access levels, and system administration features. Individuals or groups can access files, programs, and printers at full or restricted privilege levels. To achieve these capabilities under System 6, network managers had to install a separate $800 AppleShare package on a dedicated server.

System 7 networking does have limitations with non-System 7 machines. The connection to System 6 is one-way. The System 6 users may freely access drives mounted from System 7 machines, but the System 7 users can't access files on the System 6 machines, or send data to System 6 users. Currently, a number of Mac applications have trouble with System 7. This makes mixed 6/7 environments a necessary fact of life for some users. (See the earlier article for tips on switching between two Apple systems on the same workstation.)

PUBLIC FOLDER

In a pinch, System 7 users can establish limited two-way communication with System 6 machines by using Public Folder from Claris in conjunction with some teleconnectors. Public Folder is Michael Pierce's nifty file sharing utility, which Claris distributes at no charge. To install Public Folder, you just drop its icon into the System folder of a "6" Mac, or into the System Extensions folder on a "7" Mac. The "7" machines should use Public Folder only as file clients.

The System 6 users place any files they want to share into the Public Folder on their own desktop. System 7 users can then access this small patch of the "6" hard disk remotely by selecting Public Folder from the Chooser. Although this procedure is a bit cumbersome, it works. (System 6 users, of course, may access any part of a System 7 hard disk made available to them through System 7's built-in file sharing. Public Folder is unnecessary in the "6 to 7" direction.)



System 7 file sharing: MS DOS machine on Farallon card (guest) and System 6 Mac (Mac SE) are connected via AppleShare to Mac II hard disk.

MAC-PC ENVIRONMENTS

The situation last summer appeared problematical for mixed networking environments. TOPS, the old Mac-PC standby, proved to be incompatible with System 7. Ethernet Cards or Token Ring networks are a bit of overkill just to hook some Macs and PCs together for desktop publishing.

Several months down the line, the connectivity picture has brightened. New System 7-compatible packages from Farallon Computing and Sitka-TOPS make linking Macs and PCs easier now than in the System 6 days.

FARALLON PHONENET TALK

Farallon Computing offers a LocalTalk card and software for the PC at bargain basement prices. Under PhoneNet Talk, the PC becomes just one more System 7 client. The PhoneNet Card plugs into an 8-bit PC slot. The MS-DOS machine can then share files and printers over an existing Apple LocalTalk network. MS-DOS applications may print directly through Appletalk to any printer on the network. The PC can mount System 7 shared folders or drives to local MS-DOS drives or subdirectories.

This setup is simpler than the previous version of TOPS, and requires less memory. However, like filesharing with System 6 machines, PhoneNet Talk works in only one direction. The Mac users can't send files to the PC; they must wait for the PC to access a shared folder and transfer files from the DOS side. PhoneNet Talk requires System 7 or the separate System 6 AppleShare package.

Farallon has done its best to provide MS-DOS users with a LocalTalk economy package. User options include automatic creation of Mac resource forks by assigning Mac file types to DOS file extensions. If you create Microsoft Word, TIFF, or Encapsulated PostScript files on the PC, you can map the .DOC, .TIF, and .EPS extensions to specific Macintosh file creators. When the files are copied to the Macintosh, the Mac applications automatically know how to read the files.

The PhoneNet Talk software is also compatible with Ethernet and Token Ring network standards. The software may be purchased as a separate product, apart from the Farallon LocalTalk card. (The LocalTalk card, by the way, is also Sitka-TOPS compatible. If you already own, or plan to buy TOPS software for the PC, you can use the Farallon card

Continued on page 151

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Lenny Bailes is a teacher and consultant in the Bay Area. He has been writing about microcomputers since 1987. Currently he's writing a book on PC memory management and can be reached via the Internet at jrowell.sf.ca.us, or at (415)285-6232.

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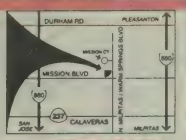

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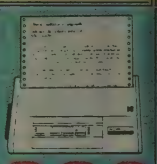

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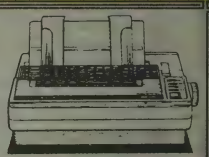

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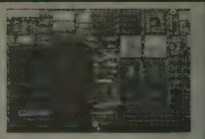

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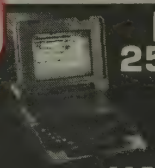

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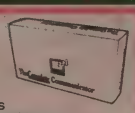

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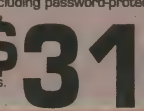

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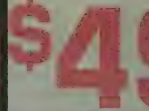

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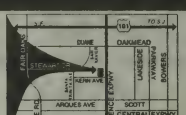

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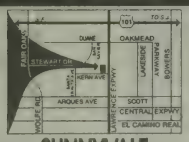

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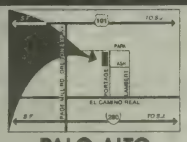

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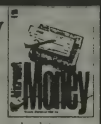

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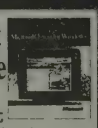

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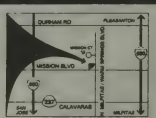

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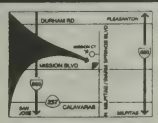

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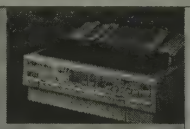

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210 CPS Draft Mode
70 CPS Letter Quality Mode

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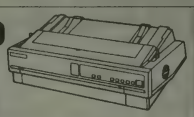

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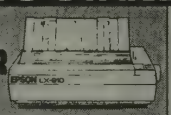

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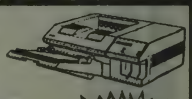

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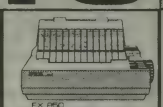

80 Column • 264 CPS Draft • 54 CPS NLQ
SelecType Front Control
SmartPark Feature • Tractor Feed
Two Year Warranty

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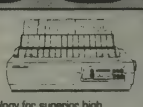
LQ-2550 24-PIN PRINTER



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136 Column • High Speed!

Superb Letter Quality. Highest quality 24-pin technology for superior high resolution text and graphics. Prints in seven colors. Smartpak lets you handle fanfold paper single sheets, envelopes and forms. Selects printer setting, SmartPark operations and page-format pre-sets. LCD SelectType front control panel. Prints 400 CPS Draft. 133 CPS Letter Quality
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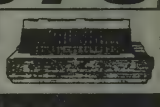
FX-1050 9-PIN PRINTER



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9-Pin Printer • 132 Column
264 Characters Per Second Draft
54 CPS Near Letter Quality • SelecType
SmartPark Features • Push Feed Tractor
Optional Cut Sheet Feeder
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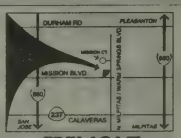

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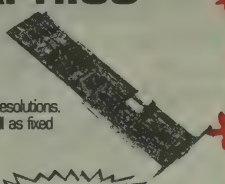

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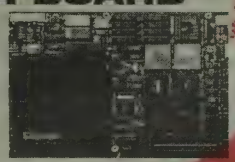

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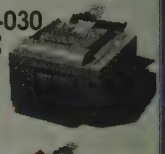

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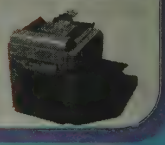

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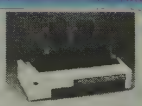

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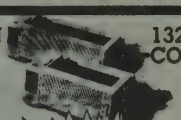

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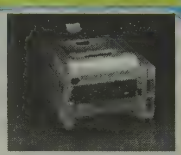

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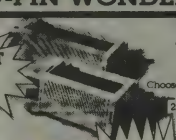

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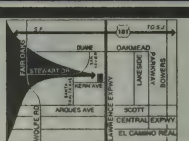

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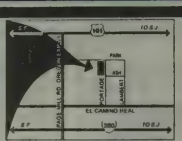

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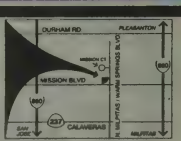

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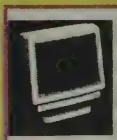

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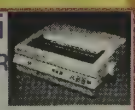

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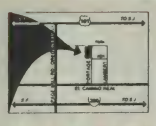

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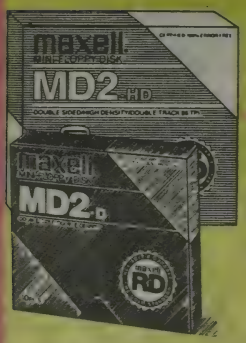

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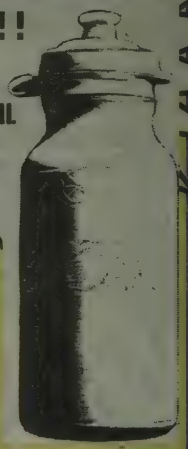

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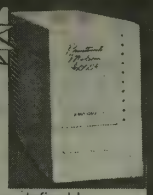

It works with V.32, V.22bis and V.22 or Bell 212 A modems to provide automatic speed adjustment. V.42bis data compression provides up to 4 to 1 compression rate and user definable dictionary sizes. Supports V.42 error correction. Supports both one-way and two-way compression. Compatible with MNP levels 2-5. Speed buffering with DTE rates up to 38,400 bps.

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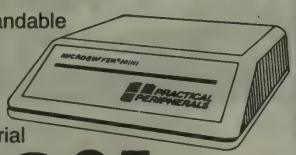

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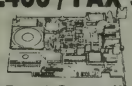

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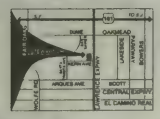

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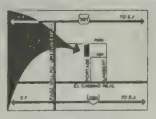

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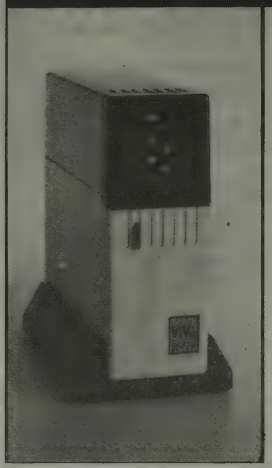

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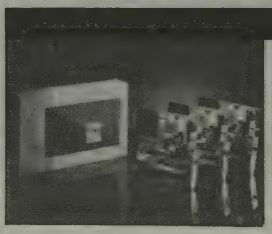

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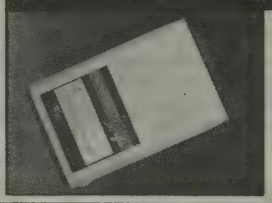

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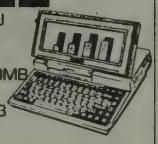

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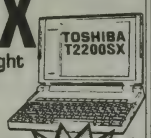

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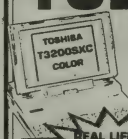

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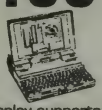

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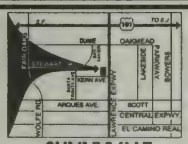

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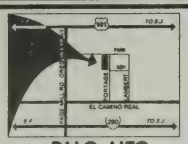

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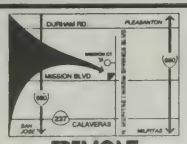

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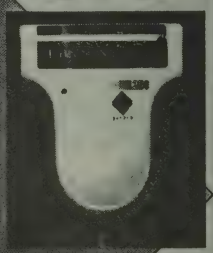

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HS9000 -9 PIECE SYSTEM
INSTALLS IN MINUTES- NO TOOLS -NO WIRING
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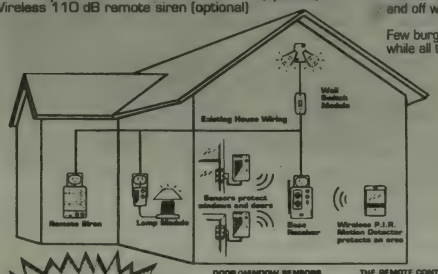
Supervised (self-checking) sensors
Protects up to 16 doors/windows (with extra sensors)
Loud alarm plus flashing lights • remote light control
Wireless passive infrared motion detector (optional)
Wireless 110 dB remote siren (optional)

Indoor and outdoor lights (connected to Lamp Modules and Wall Switch Modules) FLASH on and off when the alarm trips.

Few burglars will hang around while all that's going on!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Existing House Wiring
Remote Siren
Lamp Module
Sensors protect windows and doors
Base Receiver
Wireless P.I.R. Motion Detector protects an area
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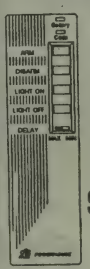


REMOTE CONTROL

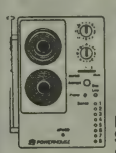
The system is armed and disarmed by the press of a single button- simple! You can also control lights remotely.
Model HT544
Included in kit
#1481138

$19.99

DOOR/WINDOW SENSOR

Sensors send wireless signals to the Base Receiver when a door or window is opened. You can protect up to 16 door/windows by adding more sensors. Sensors are supervised for professional reliability- they report in to the Base Receiver every 90 minutes.
Model DW534
Included in kit
#1481149

$14.99



BASE RECEIVER

Base Receiver makes a loud noise when alarm is tripped and sends signals over existing house wiring to flash lights connected to X-10 modules.
Model BR521
Included in kit

Not sold seperately. Sold as part of the security system only.

LAMP MODULE

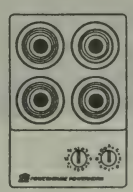
A lamp plugged into the Lamp Module will flash on and off when the alarm trips. You can also turn the lamp off and on by remote control.
Model LM465
Included in kit
#1481150

$12.95

MOTION DETECTOR

Supervised Wireless Motion Detectors send signals to trip the Base Receiver's alarm when someone walks within range.
Model SP544
Optional
#1515486

$59.95



POWER HORN SIREN

Remote wireless 110 dB siren receives signals over house wiring and trips when Base Receiver's alarm is tripped.
Model PH508
Optional
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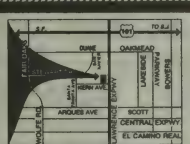

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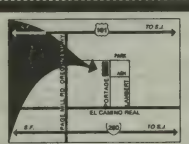

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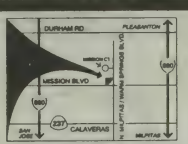

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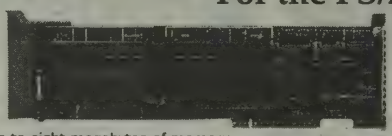

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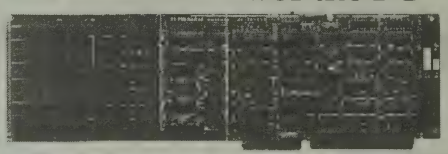

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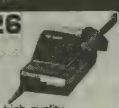

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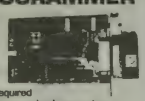

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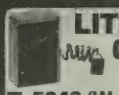

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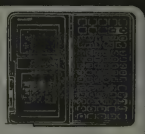

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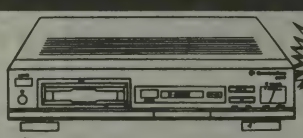

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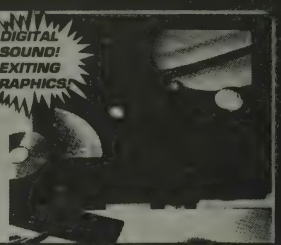

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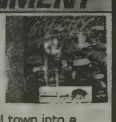

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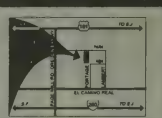

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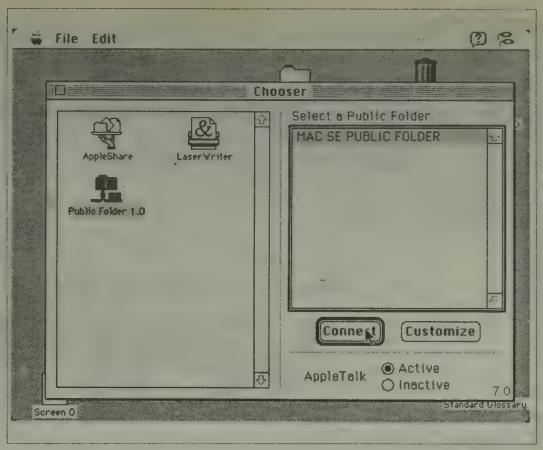
System 7 Mac can connect to System 6 machine (Mac SE) through Claris's Public Folder



Continued from page 130

in place of a TOPS Flashcard. This works with PC TOPS, v3.0 and above.)

If LocalTalk (230.4Kbits per second) isn't fast enough for your office, Farallon also makes a variety of higher-powered network cards for both Macs and PCs. Their brochure claims the Ethernet cards run at 10Mbits per second over ordinary telephone wire.

MACTOPS 3.1

After more than a year of management struggles and hardship, Sitka has finally produced an upgrade for its classic Macintosh product.

MacTOPS 3.1 is a more elegant solution for managing the System 7/System 6/MS-DOS triangle. (You can also use it to connect Macs to Sun workstations running SunTOPS.) MacTOPS provides a two-way, peer-to-peer link and supports both System 7 and System 6 machines.

MacTOPS 3.1 has a series of enhancements over the last version. Personal Access allows individual volumes on a hard drive to be published for public use, while the entire drive may be accessed with a second password. A drop-down menu duplicates the mount/publish options on the standard "button interface." "Redo connections" allows startup connections to be reestablished automatically if machines on the network have been logged off or rebooted.

The new TOPS features coexist with System 7 filesharing on a complementary basis: If a machine is set up as a server under AppleShare Filesharing, the machine runs the TOPS software as a file client only. If Apple Filesharing is turned off, the machine can run TOPS as either a server or client. MacTOPS 3.1 recognizes Apple's Print Manager for background printing. On System 6 machines, background printing is run through an add-on TOPS spooler.

PCs running PC TOPS 3.0 or above have full two-way access to any Mac or UNIX machine on the network. (The MacTOPS Personal Access feature works only between Macs.) As with previous TOPS versions, any PC drive or subdirectory can be mounted as an icon on the Mac desktop. Mac applications may access mounted PC volumes directly from the internal file menu dialog. (Watch your local computer gossip sheets for a Sitka announcement in the next several weeks about a Windows-compatible version of PC TOPS.)

MacTOPS 3.1 preserves System 7 aliasing across networks. Connections to other machines may be established automatically across the network by clicking on a predefined alias. Multiple users of applications like FileMaker, FoxBASE, OMNIS, and 4th Dimension may simultaneously access a single file with enhanced record locking protection. (A known bug in System 7 sometimes results in corrupted files if two users over an AppleShare network open the same file. This bug does not occur with multiuser applications over a TOPS network.)

The current set of MacLink+ translators included with MacTOPS 3.1 is exhaustive. Mac and PC file conversions are supported in either direction. Word Processing translators include IBM DCA, Microsoft RTF, Multimate, Multimate 4.0, OfficeWriter, Word for Windows, WordPerfect 4.2, 5.0, 5.1, WordStar, and MS Works for the PC side. The supported Mac word processing formats are MacWrite I & II, MS Word 3 & 4, MS Works, WordPerfect 1 & 2, and WriteNow. Database and spreadsheet formats include Comma-delimited (CSV), Microsoft Multiplan (SYLK), dBASE III/IV (DIF, DBF), LOTUS/Symphony (WKS, WPK), and Excel 1 & 2. Supported PC graphic file formats include AutoCAD (DXF), PC Paintbrush (PCX), Harvard Graphics and Lotus Freelance (CGM), LOTUS (PIC), Encapsulated PostScript, TIFF, Windows BMP, Digital Research (GEM/IMG), WordPerfect (WPG), and FrameMaker (MIF). On the Mac side these can be converted to PICT, TIFF, RIFF, EPS, or standard PostScript.

Aside for Hackers Only: What if you'd prefer to use Appleshare Filesharing for a System 7 server on a network instead of TOPS—but you'd also like to publish folders for a PC? MacTOPS 3.1 won't support AppleShare and TOPS fileserving concurrently on the same machine, but the ancient TOPS 2.1 will! TOPS 2.1 lacks some of MacTOPS 3.1's advanced features, but it actually does run under System 7. TOPS 2.1 doesn't know anything about System 7 AppleTalk, but it does its job independently, without conflict. (Note: Sitka does not officially support TOPS 2.1 under System 7. The foregoing phenomenon is merely my own observation. TOPS 3.0, the version immediately preceding MacTOPS 3.1, is not at all System 7 compatible.)

System 7's networking support includes password protection, multiple access levels, and system administration features. Individuals or groups can access files, programs, and printers at full or restricted privilege levels.

COST CONSIDERATIONS

For Mac/PC connectivity TOPS is a more expensive solution than Farallon's PhoneNet Talk. PC TOPS software, plus a PC TOPS Flashcard, cost twice as much as the Farallon PC card/software combination. Add to that the cost of the TOPS software on the Mac end.

Sitka does have an inexpensive upgrade option for Mac users who already own a previous version of TOPS. $75 will upgrade an entire site, regardless of the number of installed nodes. Purchasers of MacTOPS 3.1 also receive coupon options for free antivirus software (SAM or Norton Anti-Virus), and Sitka's Inbox email system.

The Farallon network depends on the Apple System 7 software; it will not allow PCs to connect to System 6 Macs unless a separate AppleShare module is purchased from Apple. The Farallon network does not include any file translation software, although it does allow the Mac file type to be designated for already-compatible applications.

Either PhoneNet Talk or MacTOPS 3.1 can allow Mac/PC networks to survive the upgrade to System 7 with increased functionality.

In Part 3 of this series, we'll continue our examination of System 7's enhancements by reviewing the Publish and Subscribe features of System 7 Savvy applications. ■

RESOURCES

System 7 Software
Apple Computer

Public Folder
Claris Corporation
(also available from BMUG disk library)

Farallon PhoneNet Talk PC, $295 for 8-bit PC Card, PhoneNet Connector, plus PhoneNet Talk Software; $195 for software alone
Farallon Computing, Inc.
2000 Powell Street, Ste. 600
Emeryville, CA 94608
(510)596-9000

MacTOPS 3.1, $299 per node, Site Upgrade $75, (software only—node purchase includes DataViz MacLink+ Translators)
PC TOPS 3.0, $249 per node (Software only)
PC TOPS FlashCard XT, $239 (for 8-bit card & Teleconnector)
MicroChannel FlashCard, $329 (for IBM PS/2 machines)
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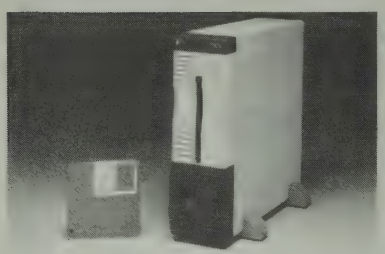
OCEAN VISTA 130 REMOVABLE DISK DRIVE

Ocean Vista 130 is a rewritable magneto-optical storage system with 128MB. Because Vista stores data on 3.5" removable magneto-optical (MO) cartridges, it provides unlimited off-line storage capacity and a simple way to safeguard sensitive data. Large amounts of data can be easily transported between sites or conveniently locked away for safekeeping. This system works with Apple Macintosh and all IBM XT, AT, PS/2, and compatible computers. The IBM version supports Novell NetWare, SCO, UNIX, and Xenix. The Macintosh version includes OCEAN's Compass software and MacTools Deluxe Utilities from Central Point. (IBM version start at $3395. The Macintosh version is $3195) Novatron, Inc., 6740 Eton Ave., Canoga Park, CA 91303. (818)888-7715.



ASP JETWAY PRINTER SHARING DEVICE

The ASP JetWay printer sharing device works with any laser, dot matrix, or other printer to provide a low-cost alternative to a traditional LAN. This high-speed, hassle-free device allows up to eight users to have instant, simultaneous access to a single printer. Installation is simple—you simply plug your PCs and printer cable into the JetWay, plug in the power cord, and you're ready to print. ASP includes step-through setup software that allows non-technical users to tailor the JetWay to their printing needs. Two models of JetWay are available: a four-port version that allows up to four users to share one printer, and an eight-port version that allows up to eight users to share one printer. (Four-port version, $345; eight-port version, $545)ASP Computer Products, Inc., 160 San

Continued

PRODUCT UPDATES

➤**CE Software** began shipping **QuickMail 2.5**, the new version of its electronic mail system for Macintosh. CE Software, Inc., 1801 Industrial Cr., PO Box 65580, West Des Moines, IA 50265. (515)224-1995. AppleLink: CESOFTWARE.

➤**Clarion Software** announced **Professional Developer 3.0**, a major upgrade of its advanced database application development tool for MS-DOS microcomputers. Clarion Software, Inc., 150 E. Sample Rd., Pompano Beach, FL, 33064. (305)785-4555.

➤**ConVal Software** released **FileXref v1.3**, a programmer's cross-reference tool that works on the complete collection of files that makes up a software application. ConVal Software, Inc., 11607 E. Butter Creek Rd., Moorpark, CA 93021. (805)529-6847.

➤**DacEasy** announced the release of **DacEasy Accounting** and **DacEasy Payroll 4.2**. Current user upgrades are $45 for each program. DacEasy, Inc., 17950 Preston Rd., Suite 800, Dallas, TX 75252. (214)248-0205.

➤**Meta Software** is shipping **MetaDesign 3.0**. This new version can run under Windows 3.0. Users can upgrade for $69.95. Meta Software Corp., Attn: Upgrade, 150 Cambridge Park Dr., Cambridge, MA 01240.

➤**PowerSoft** announced **QuickPix 1.1**, with support for both TIFF and PCX graphics files. PowerSoft, Inc., PO Box 956338, Duluth, GA 30136. (404)446-3185.

➤**Priority Management Systems** has introduced a powerful network version of its recently released IBM/DOS-compatible personal productivity software, **The Priority Manager Network Edition**. Priority Management Systems, Inc., M5-601 W. Broadway, Vancover, BC, Canada V5Z 4C2. 1-800-663-8846.

➤**RasterOps** announced a new **three-year warranty** across its entire product line. This new program will be effective, retroactively, from July 1, 1991. RasterOps Corp., 2500 Walsh Ave., Santa Clara, CA 95051. 1-800-SAY-COLOR.

➤**SuperMac** announced a **major price reduction** of its **Spectrum** family of 8-bit cards. SuperMac has also increased the warranty on all its 8- and 24-bit graphics cards to five years. SuperMac Technology, Inc., 485 Potereo Ave., Sunnyvale, CA 94608. (408)245-2202.

➤**The Wollongong Group** released **PathWay Access 2.0 for DOS, Windows 3.0,** and **Macintosh.** Access 2.0 extends desktop users' capability to transparently communicate with multivendor hosts and to a wide range of resources on a network. The Wollongong Group, Inc., 1129 San Antonio Rd., Palo Alto, CA 94303. (415)962-7100.

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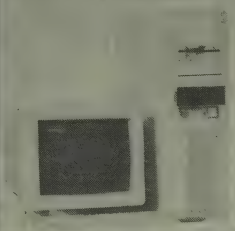

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PRODUCT SPOTLIGHT

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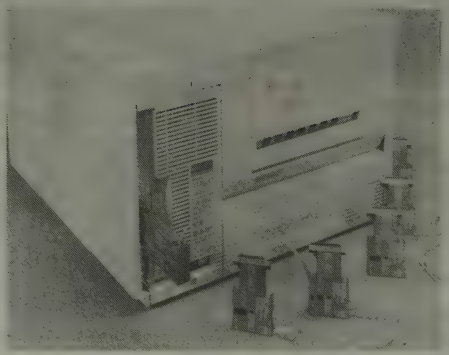

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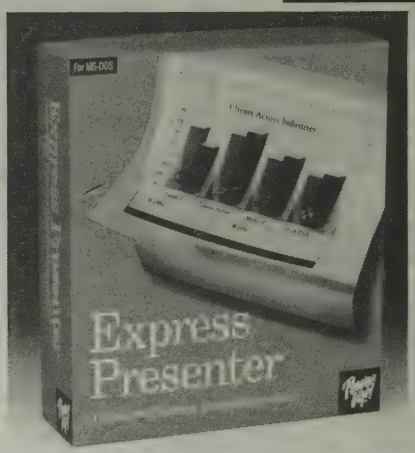
Print Express allows up to thirty users to share one printer. It consists of a transmitter for every user station and a receiver for the printer. Both plug into the parallel ports. The actual data transmission is performed over twisted-pair cables at a rate of 370,000bps. Print Express does not require software to operate—it connects directly to the printer port used by application programs such as Windows, dBASE, Lotus, and Ventura. As soon as a print command is entered, the print job is queued on the Print Express network. Each job is then printed in the sequence in which it joined the network. (The single-unit retail price for a starting kit consisting of a transmitter and receiver, connectors, cables, and power supply is $149. Additional transmitters are $59 each) IMC/Data Express, Inc., 1360 Bordeaux Dr., Sunnyvale, CA 94089. (408)744-9004.

MICRO EXPRESS 25MHZ 386SX

The Micro Express ME 386-SX/25/Caching offers the 25MHz AM386SX microprocessor from Advanced Micro Devices. This PC offers 35K of RAM caching, expandable to 64K, 4MB of RAM, expandable to 16MB, a 5.25" 1.2MB floppy drive, one parallel port, two serial ports, a compact case, and a choice of keyboards. In addition to the base configuration, Micro Express offers a special package that includes an 80MB hard disk drive, a 3.5" 1.44MB floppy drive, and Extended VGA color monitor and card with 1024 x 768 resolution and 256 colors. A fifteen-month warranty is included on parts and labor, and a toll-free number for free unlimited technical support. Also, if a board fails, Micro Express offers twenty-four-hour express board replacement service. (Base configuration is $599. Special package is $1499) Micro Express, Inc., 1801 Carnegie Ave., Santa Ana, CA 92705. 1-800-989-9900.

PC SOFTWARE



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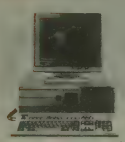

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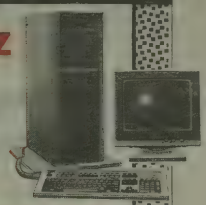

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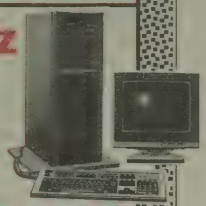

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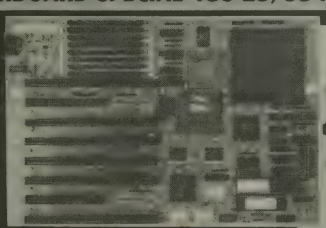

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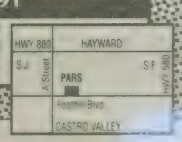

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- 16 bit SVGA card with 1 MB
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- 101 enhanced keyboard
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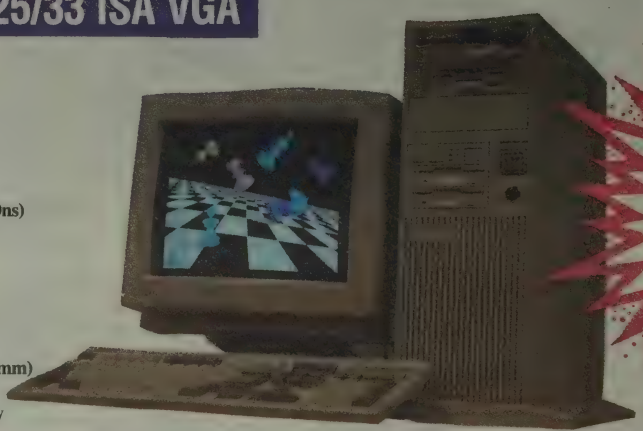

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- IDE Controller
- Mono or VGA Monitor 1024x768
- MGP Or 16-Bit VGA Card 1024x768 w/512K
- 2S/1P/1G
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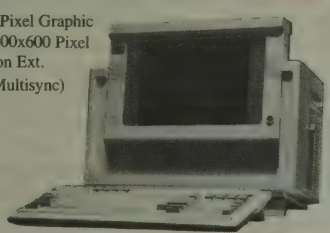

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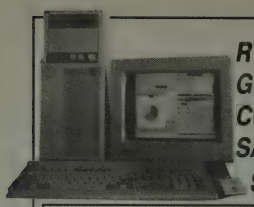

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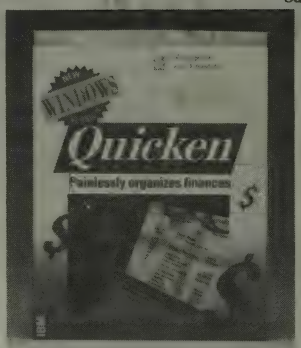

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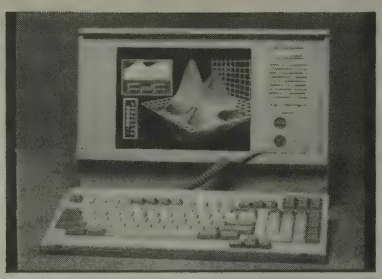
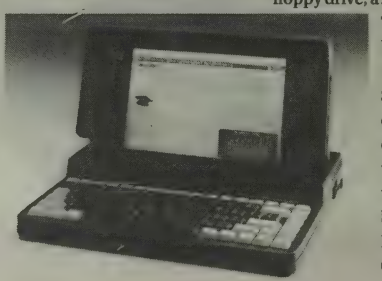


The Compaq Portable 486c Personal Computer, featuring an EISA-based, Intel 33MHz 486 portable, represents Compaq's first implementation of Thin Film Transistor (TFT) Active Matrix technology. This new technology, combined with a hot cathode backlit panel and the integrated Compaq Advanced Video Graphics system, enables the color VGA display to provide high-contrast colors and fast screen responses. The Portable 486c is available in two models. Each model comes standard with 4MB of RAM, expandable to 32MB, a 3.5" 1.44MB disk drive, a full-size detachable keyboard, and a one-year warranty. The Model 120 includes a 120MB hard disk drive, and the Model 210 includes a 210MB hard disk drive. (Suggested retail price for the Model 120 is $9999; the Model 210 is $10,999) Compaq Computer Corp., PO Box 692000, Houston, TX 77269-2000. (713)370-0670.

TANDY 1800 HD NOTEBOOK



The Tandy 1800 HD notebook computer, complete with 3.5" 1.44MB floppy drive, a 20MB hard disk drive, and batteries, weighs less than 6lbs. This 12MHz, 286 notebook includes a triple supertwist backlit VGA display with thirty-two shades of gray and 1MB of RAM, expandable to 3MB. The Tandy Power View System feature indicators for power on/off and battery/charging status are clearly visible even when the lid is closed. The 84-key keyboard offers the KeySwitch system to allow interchanging the Caps Lock and Ctrl keys to suit users who are familiar with either typewriter or PC keyboards. This notebook comes with MS-DOS 5.0 and Desk-Make productivity software. ($1999) Tandy Corp., 700 One Tandy Center, Fort Worth, TX 76102.

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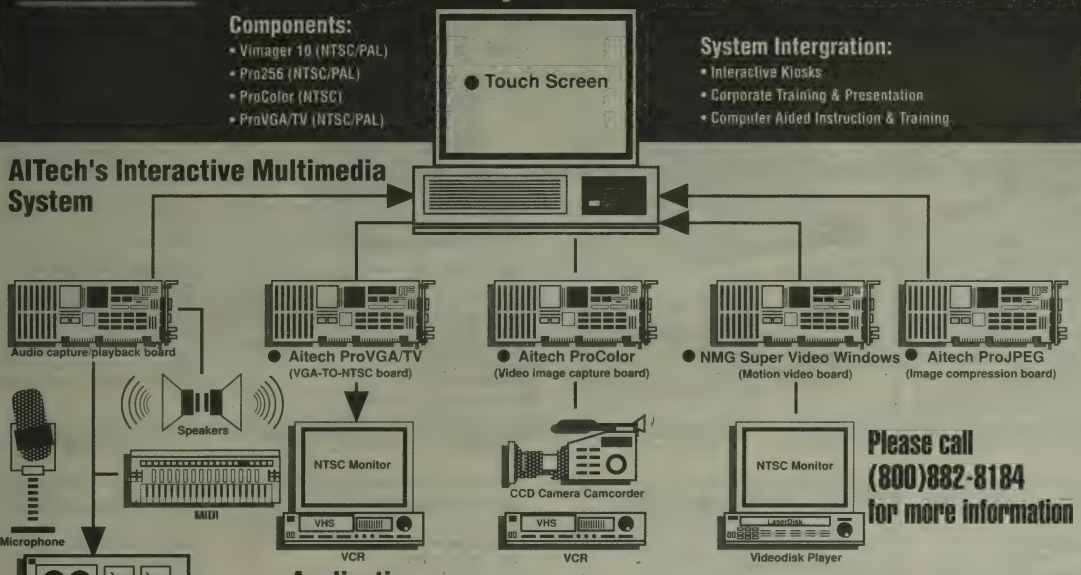

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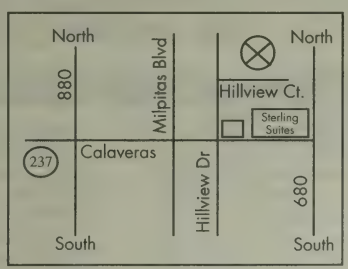

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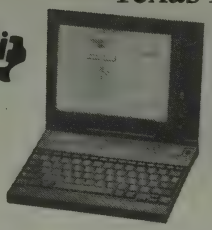

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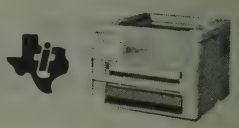

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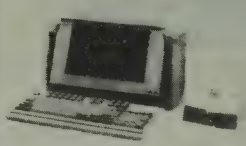

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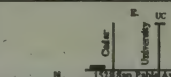

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80287-6 6 MHz	89
80287-8 8 MHz	89
80287XL 12 MHz (Laptop)	105
80287-10 10 MHz	89
80C287-12 MHz	109
80387SX-16	130
80387SX-20	140
80387DX-20	185
80387DX-25	195
80387DX-33	195
WEITEK	
3167-20 20 MHz	$300
3167-25 25 MHz	350
3167-33 33 MHz	400
4167-25 MHz	600
4167-33 MHz	700
CYRIX	
83087-16 16 MHz	$175
83087-20 20 MHz	175
83087-25 25 MHz	175
83087-33 33 MHz	185
83SX87-16 16 MHz	120
83SX87-20 20 MHz	125
IIT	
8C87-8	$69
8C287-10	79
8C287-12	89
287-20	99
8C387-20	150
8C387-25	155
8C387-33	160
AMD	
80C287-10	$89
80C287-12	110
ULSI	
US 83C87 16 MHz SX	$120
US 83C87 20 MHz SX	135
US 83C87 25 MHz	145
US 83C87 33 MHz	175

EPROMS

2764-200ns	$2.75
27C64-200ns	3.00
27128-200ns	3.00
27128-150ns	5.00
27256-200ns	3.00
27C256-200ns	3.75
27C512-200ns	6.00
27C020-150ns	13.00

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1 MB Module	$125
4 MB Module	330
DeskPro 386/20e, 25e	
1-9 MB Exp Brd	225
4-12 MB Exp Brd	529
DeskPro 386s-16	
1 MB Module	125
4 MB Module	315
1-9 MB Exp Brd	225
4-12 MB Exp Brd	529
DeskPro 286N, 386N, 386SX/20	
2 MB Module	200
4 MB Module	545
DeskPro 386N, 386SX/20	
2 MB Module	225
DeskPro 286N, 386N	
0-4 MB Exp Board	115
DeskPro 386/33SL, 486/25, 486/33L System Pro	
2 MB Module	200
8 MB Module	900
32 MB Module	6000
DeskPro 386/16	
1 MB Kit	169
1 MB Exp Brd	398
2 MB Exp Brd	567
4 MB Kit	399
4 MB Exp Brd	799
8 MB Exp Brd	1199
Portable 386	
1 MB Kit	268
4 MB Exp Brd	775
4 MB Exp Brd	775
Portable LTE (8086)	
512K Module	140
Portable LTE/286	
1 MB Module	100
2 MB Module	150
4 MB Module	630
Portable SLT/286	
1 MB Module	190
4 MB Module	628
Portable SLT/386	
1 MB Module	250
2 MB Module	410
4 MB Module	819
Portable III	
512K Kit	98
2 MB Kit	218

IBM PS/2 MEMORY

Mdl 30/386, Exp Brd	
512K Kit	$54
2 MB Kit	175
Mdl 70-061; -121; 55SX; 65SX: Exp Brd	
1 MB Module	95
Mdls 70-061: E61: 121: 50Z, 55LS 55SX: 65SX: P70:	
2 MB Module	179
Mdls 70-A21: A61, B21, B61	
2 MB Module	150
Mdls 55SX: 65SX: 55LS, 65LS	
4 MB Module	370
Mdls 80-111; 121, 311, 321	
2 MB Card	145
Mdls 80-A21; A31	
4 MB Card	220
Mdls 80-A21: A31	
4 MB Card	469
Mdls 90; 95	
2 MB Module	325
4 MB Module	630
Mdls 50 & 60	
2-8 MB Exp Brd.	529
Mdls 70 & 80	
2-8 MB Exp Brd	489
2-14 MB Exp Brd	500
4-16 MB Exp Brd	925
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PRODUCT SPOTLIGHT

GAMES

By Mike Markowitz

THE PLAYROOM

Designed By: Leslie Grimm, Dennis Caswell, and Lynn Kirkpatrick
Published By: Brøderbund
For: Macintosh (System 7 compatible; 2MB required for 256 colors)
Recommended Ages: 3–6
List Price: $49.95

The Playroom is a software environment designed to teach very young users about letters and numbers. The original Mac version collected an impressive array of awards despite the limitations of a monochrome display and the curse of copy protection. This new version eliminates both of these shortcomings.

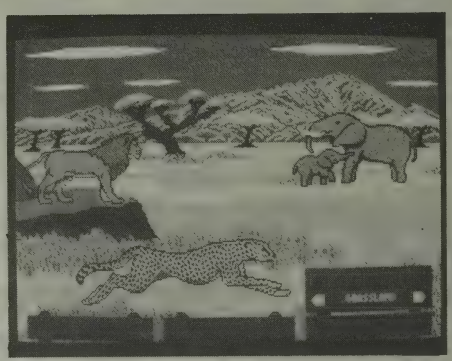
The package includes both the two-disk monochrome version and the four-disk color version.

Every fifth time you launch the program, you have to enter a pictographic code from the back page of the manual in order to continue. This is much simpler than the code wheel used by many games, and it seems like an eminently reasonable solution.

The original prototype for The Playroom was developed in HyperCard, and the program reflects the style and conventions of that medium—you click the mouse on various objects to make stuff happen. The stuff includes sounds, animated effects, and transitions to other screens and activities. (Brøderbund, Inc., 1-800-521-6263)

THE SECRET CODES OF CYPHER: OPERATION WILDLIFE

Designed By: Jeff Silverman
Published By: Tanager Software
For: IBM PC and compatibles (640K; VGA, MCGA, EGA, or Tandy 16-color graphics; supports mouse and popular audio cards)
List Price: $49.95



Like soap operas or music videos, entertaining educational software packages ("edutainments") increasingly seem to follow a rather rigid formula. The user is an adventurous investigator who travels around, uses high-tech gadgets, and collects clues to solve a puzzle. We might call this the "Carmen Sandiego" paradigm, after the enormously successful series of Brøderbund games.

Friendly Software Store

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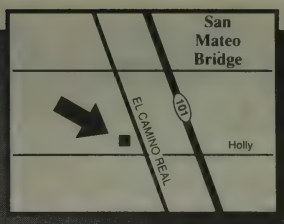

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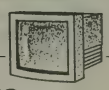
Video



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Software .. $179

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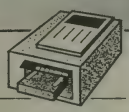

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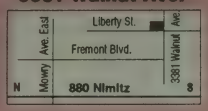

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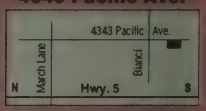

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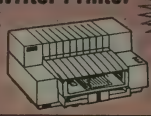

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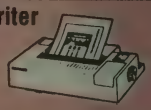

Hewlett Packard DeskJet 500 Printer

- 300-dpi output
- Spreadsheets at the push of a button
- Wide variety of built-in fonts
- 3-year warranty
- Quiet, desktop operation

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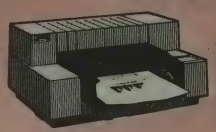


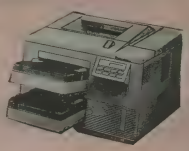
HP Desk Writer C Printer

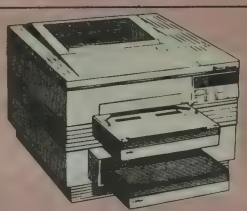
This color printer is ideal if you want primarily black output, but are eager to use up to 16.7 million colors and greyscale in your communications. Its 300 dpi color output rivals that of printers costing three times as much, plus it is networkable and prints on plain paper. Built-in print spooling plus Hewlett-Packard's dependable 3 year Warranty.

$649

LaserJet IIISi

17 pages per minute
300 DPI resolution
1 MB expandable to 17 MB
4 memory slots
2 input trays
1000 sheets paper capacity
14 bit mapped fonts
13 scalable typefaces
2 font slots





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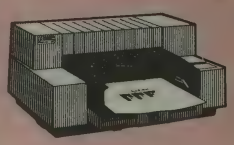
LaserJet IIID Printer

- Advanced paper-handling
- Resolution enhancement for the best 300-dpi printing
- Ideal for high-volume, multi-user environments
- Wide variety of easy-to-use, scalable, built-in typefaces
- Optional envelope feeder handles 50 envelopes

HP DeskJet 500 C color printer

Only $699



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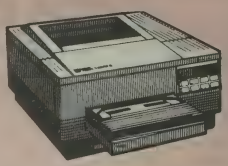
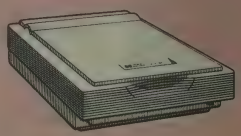
Now Hewlett-Packard LaserJet Printers are PC or Macintosh compatible
AppleTalk compatibility with optional interface
Dependable HP performance



HP ScanJet IIc

NEW

The new HP ScanJet IIc gives you 256 levels of gray or 24-bit color professional quality documents. Supports IBM AT-compatible PCs, MicroChannel or Macintosh personal computers.



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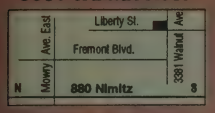

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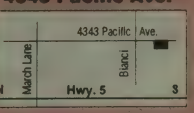

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OKIDATA® OL 400 $599

To earn the Okidata OK, we had to re-invent the laser printer

At $599, the Okidata OL400 is the lowest-priced page printer on the market today. What's more, that price includes features you won't find on any LaserJet.

The 4 ppm OL400 emulates HP® Series II for compatibility with most popular software, and comes complete with more standard type faces and more resident fonts, plus a high-capacity paper tray that's optional on the HP-all in a slim, lower-profile design that's less bulky on a desktop.

The Laserless Printhead: Warranteed For 5 Years.

The OL400 also comes with the longest warranty in the industry: 5 years on the printhead, plus 1 year parts and labor on the entire printer. To deliver a warranty that strong, our engineers had to re-invent the laser printer.

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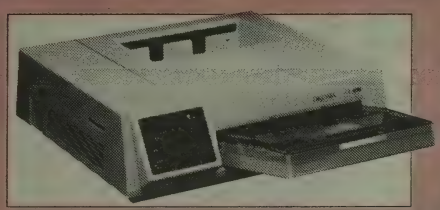

Its All In Our Head.

Besides being inherently reliable, the simpler design of the Okidata printhead also means a straight-line paper path that's less likely to jam—even when feeding envelopes, heavy stock, or labels. And, since we build it ourselves, the cost stays low.

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The performance and features of the OL400 were good enough to earn it a PC Magazine Editors' Choice Award. But it also had to earn something else — the Okidata OK.

What's the Okidata OK? Simply our promise that every printer we make will deliver not merely acceptable performance, but out-standing performance — not just good value, but exceptional value.

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We don't just design it to work. We design it to work wonders.

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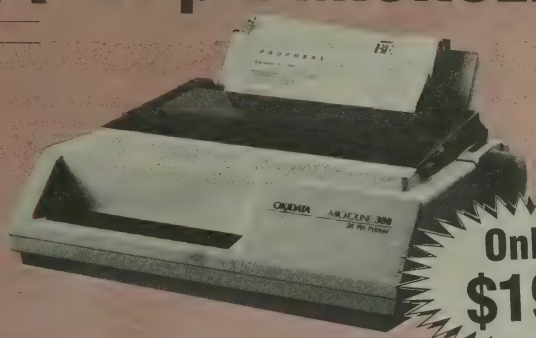
Print Method:	24-pin (.20 mm diameter), Impact Dot Matrix	
Print Direction:	Bidirectional, short-line seeking	
Graphics Resolution:	60 x 72 dpi minimum 180 x 360 dpi maximum	
Print Speed and Character Matrix:	**Speed**	**Horizontal x Vertical**
Letter Quality	60 CPS	30 x 18 @ 12 cpi
Utility	180 CPS	9 x 17 @ 12 cpi
Characters Per Line:	**CPI**	**Max. Char./Line**
	10	80
	12	96
	15	120
	17.1	137
	20	160
	PS	—
Vertical Line Spacing:	**Fixed**	**Variable**
	6 lpi	n/60"
	8 lpi	n/180"
Feed Rate:	2.2 ips	
Character Sets:	Standard ASCII Epson Character Set IBM Set I and II 14 Foreign Language Sets Zero/Slashed Zero	



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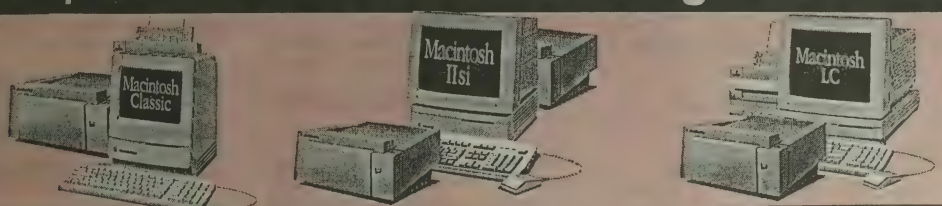

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HP IIID/Postscript	2195/2795
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OKIDATA

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ML380	209
ML390 PLUS	407
ML391 PLUS	553
OL400	599
OL800	899
OL830	1249

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T1000XE	1077
T1200XE/20MB HD	1539
T1200XE/40MB HD	1769
T2000/40MB HD	2424
T3100SX/80MB HD	3079
T5200/100MB HD	4005
T5200C/ 200MB HD	5859

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LQ510	237
LQ570	254
LQ860	542
LQ870	428
LQ1010	346
LQ1170	587
FX850	286
FX1050	400
DFX5000/8000	CALL

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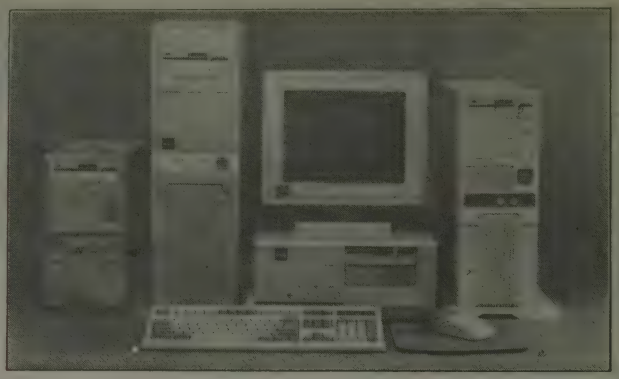

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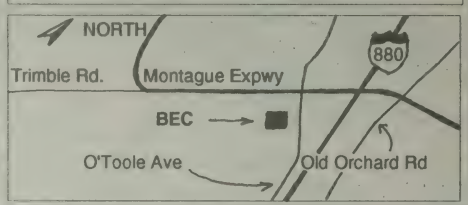
286-12	$268

Basic System Configuration includes:
Motherboard & CPU • 1.2MB or 1.44MB Floppy Drive •1MB memory • 1:1 2HD/FD IDE controller Math coprocessor socket • 2S/1P/1G Ports Case & Power Supply • Internal clock/calendar



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•Basic system configuration
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•14" SVGA monitor
1074x768 w/1MB SVGA card
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•Basic system configuration
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•14" SVGA monitor
1074x768 w/1MB SVGA card
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•Basic system configuration
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•Basic system configuration
•IDE 40MB hard drive
•VGA monitor w/512K16bit VGA card
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•Basic system configuration
•IDE 40MB hard drive
•VGA monitor w/512K 16bit VGA card
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- Mitsumi 101 Keyboard or KeyTronic 101 Keyboard

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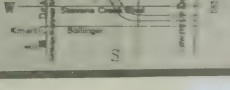

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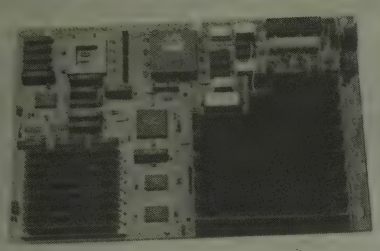

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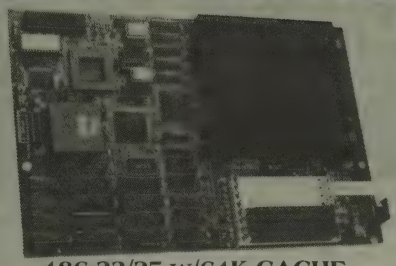

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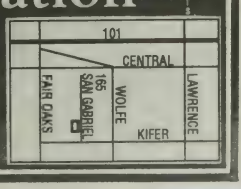

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The educational value of these games derives from the way they encourage learners to use reference materials, make inferences from emerging patterns of information, and manage complexity.

The puzzle is an encrypted message (based on a simple substitution cypher). The locale is Discovery City, where street names in every neighborhood are an exercise in category recognition (islands, horses, national parks, trees, etc.). The clues are facts about eighty-seven mammals. When you collect enough clues to identify the animal, you enter the Wildlife park, select the animal from its appropriate habitat, and (if you have made the right deduction) receive part of the encrypted message.

To decode the message, you can ask the computer to provide the substitutions for common letters and experiment to find the other letters. Anyone who has grown up on a steady diet of Wheel of Fortune should have no trouble with this. To make things challenging, you can play using Morse code, Semaphore, American Sign Language, or Braille symbols instead of the standard alphabet.

The package includes a code wheel for copy protection, one 3.5" (720K) and two 5.25" (360K) disks. After an installer program decompresses the files, they occupy a modest 844K of disk space.

The Secret Codes of Cypher is a well-crafted program that scrupulously follows the conventions of its genre. Graphics and animation are excellent, and the bouncy sound track can be turned off. To me the set of animals and habitats seemed rather limited, but the tradeoff is a tough choice between richness of the database and outrageous disk storage requirements. (Tanager Software, Inc., 1933 Davis St., #208, San Leandro, CA 94577. 510/430-0900)

ECO-SAURUS

Designed By: Thomas F. Cardin, Jr. and Pat Campbell
Published By: First Byte
Distributed By: Davidson & Associates
For: IBM PC and compatibles (640K, 8MHz or faster; VGA, MCGA, or EGA graphics; supports Ad Lib audio card, Covox Speech Thing)
Recommended Ages: 4–9
List Price: $39.95

Eco Island, home to a community of cartoon saurians, has become an environmental mess. Discarded cans, bottles, paper, plastic, and organic waste litter the landscape. Your mission is to clean it up. By recycling garbage and fighting waste of water and power, you help to build a spacecraft, enabling a stranded alien to return to his home planet.

Eco-Saurus is an impressive technical achievement. The 256-color graphics are detailed and attractive. The price, of course, is a heavy demand for disk storage space. The program is installed from three 3.5" or six 5.25" disks, and after decompression its fifty-five files take up about 2160K. A nice feature is an automatic remover program, an EXEC that lets you delete all the pro-

Continued

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gram files and sub-directories with a single command.

On many systems the program can generate understandable synthesized speech through the computer's built-in speaker, without any additional hardware (although it supports Ad Lib, Sound Blaster, and other high-quality audio devices). All the characters' speech is also displayed on screen as text.

To understand the game's many features, you need to read the 18-page booklet. Some important tips are not obvious, for example:

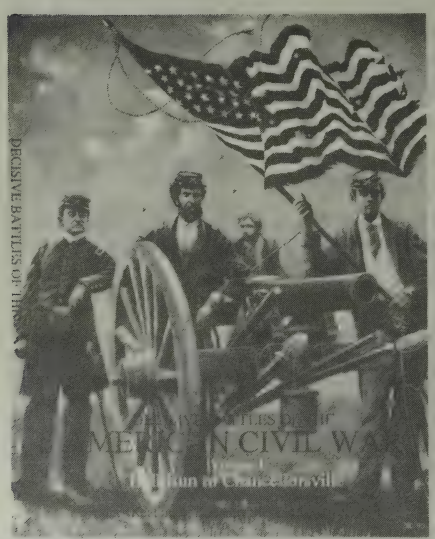
- Select the trees and rocks, because they will also talk to you.
- Go to the same area more than once. You may see different characters on your return visits.

Although Eco-Saurus can be managed from the keyboard, it plays faster and more enjoyably with a mouse. (Davidson & Associates, Inc., 3135 Kashiwa St., Torrance, CA 90505. 1-800-556-6141)

DECISIVE BATTLES OF THE AMERICAN CIVIL WAR

VOL. I: BULL RUN TO CHANCELLORSVILLE

Designed By: Roger Keating, Danny Stevens, and Ian Trout
Published By: Strategic Studies Group
For: Macintosh (1MB for monochrome, 2MB for color, System 7 compatible)
List Price: $49.95



The generals who made the American Civil War (1861–1865) such a futile bloodbath learned their trade as captains and majors during the Mexican War (1847–1848). In the intervening decade, the range and killing power of small arms increased greatly, but there was no rethinking of tactics or training. On one battlefield after another Yankees and Rebels stood in 18th-century columns and lines to mow each other down with weapons of almost 20th century lethality.

This game is a Macintosh simulation of the problems faced by commanders in six of these battles:

- First Bull Run (July 21, 1861)
- Shiloh (April 6–7, 1862)
- Second Bull Run (August 29–30, 1862)
- Antietam (September 17, 1862)
- Fredericksburg (December 13, 1862)
- Chancellorsville (May 2–4, 1863)

The basic units in the game are brigades (one to three thousand men), and each turn represents an hour of real time. Civil War battles tended to sprawl over many square miles, but without radios or helicopters, generals had trouble controlling their own forces and locating the enemy. The game lets you recreate these frustrations, or ignore them by clicking a few options during the initial setup.

SSG, a small Australian software company, represents a unique combination of historical scholarship and programming talent. The Mac implementation of Decisive Battles is a significant improvement over the earlier PC version. You can play either side against a shrewd and determined computer opponent. You can get into the game's database to alter unit strengths, locations, and arrival times, or even design your own battles. The 16-color screens are beautiful, and the user interface is smooth and intuitive. A new "cohesion" display feature causes the icons that represent units to crack and crumble as each army suffers casualties. The documentation has also been improved. There is a full-color, fold-out reference map. The only "flaw" I could find in the design is the seeming indestructability of headquarters units (representing senior commanders, staff, and about one hundred clerks and messengers.) These guys can hold ground, and resist overwhelming concentrations of enemy fire without being destroyed. Something here needs to be rethought and redesigned, but in most situations it does not unbalance the game.

The recent public television documentary series seems to have revived interest in the Civil War, making this game a timely new release. No date has been announced for the next volume, which includes Gettysburg and Chickamauga. (Strategic Studies Group, 8348 Monticello Dr., Pensacola, FL 32514. 904/494-9373)

ACCESSORIES

SUPER RD MEDIA

Manufactured By: Maxell
List Price: $35.70 box of ten
Reviewed By: Wayne Yacco

You might think there's been nothing new in 3.5" floppy disks since Sony invented them several years ago. But then you'd be wrong—just as I was until Maxell sent me a couple of boxes of their Super RD media. Maxell claims that these diskettes have overcome the cause of most common media failures.

It seems that Maxell locked some of its engineers in a

Continued

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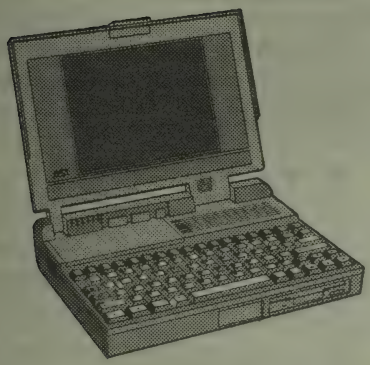

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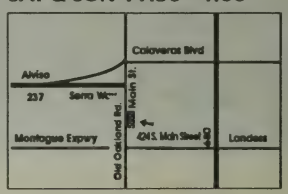

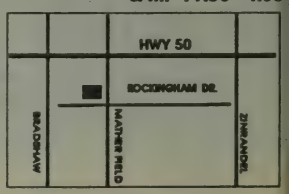

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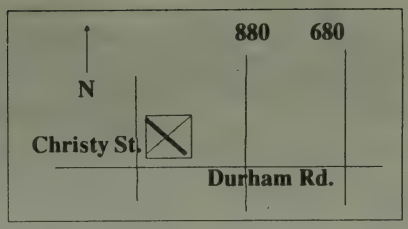

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cramped, windowless room for endless months, and forced them to test all the diskettes that people sent back for replacement. According to the company, these lost souls learned that a high percentage of diskette failures are in one way or another caused by the steel shutters that are supposed to keep contaminants away from your magnetic floppies. While they're keeping out some contaminants, they are creating others by scraping tailings off the soft plastic shell. They also occasionally pop off, or dent.

So, Maxell came out with its Super RD line. The RD's innovation is a plastic shutter that stays on better, won't dent, and doesn't scrape the shell. (It's too soft.) It's eerie how these shutters bend under your thumb and then spring back. Otherwise, RD's work just like ordinary floppies. Maxell is now shipping them in both 2MB (unformatted) and the new 4MB capacity. You can use the 2MB in Mac Superdrives, many PCs, and most compatible laptops. The 4MB is largely limited to IBM's new PS/2s, and some subsystems like the MicroSolutions BackPack or the Pacific Rim Parallel-Line Floppy. They will probably spread in popularity, though. (Maxell, Inc., 22-08 Rt. 208, Fair Lawn, NJ 07410. 201/794-5932)

PC HARDWARE

LOW-PROFILE SIMMS

Manufactured By: Apricorn
List Price: $159
Reviewed By: Wayne Yacco

Apricorn has just introduced a standard 30-pin 1MB SIMM that could solve a tricky installation problem for some users. These SIMMs use two 4Mbit, and one 1Mbit, SOJ chips that are attached sideways. They are only 1/2" in height as a result—good news for those unable to use ordinary SIMMs because of space-imposed interference. They are actually 1/8" shorter than 256K SIMMs. There is just one catch. Your device must be able to address 4MB SIMMs. (If not, it won't work with these SIMMs because of their 4Mbit chips.) Otherwise, they'll work any place a standard SIMM will.

The earliest 1MB SIMMs were made by soldering DIPs (the dual-inline-package memory chips that look like little black caterpillars) to a small circuit board. Unfortunately, they were so tall, over an inch, that they wouldn't fit in some applications. So, low-profile SIMMs were introduced using smaller surface-mount chips called SOJs. At just a coarse hair over 3/4", these are now the standard SIMM—but they are still relatively tall compared to the Apricorn SIMM.

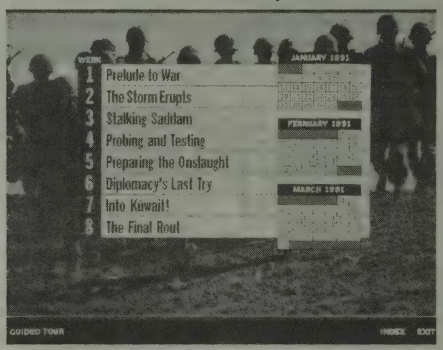
There are two types of installation that are most likely to benefit from Apricorn's chips. The first is on memory expansion boards where standard 1MB SIMMs (which are over 3/4" tall) threaten to bump into the back of the next card. These SIMMs may also help on some motherboards that were built with their SIMM sockets directly in line with their bus slots—if they allow full-length boards to pass over them. In addition, they work in the oddball Tandon machines for which they were designed.

There are now SIMMs with as much as 16MB on them, and 4MB SIMMs are becoming common. Apricorn, a big player in laptop memory, also makes a standard 4MB module to the same high standards as these extra low-profile 1MB modules. Both capacities have contacts plated with gold, not tin, for superior reliability. (Apricorn, Inc., 10670 Treena St., Ste. 110, San Diego, CA 92131.

MACINTOSH SOFTWARE REVIEW

DESERT STORM CD-ROM

Published By: Warner New Media
List Price: $39.99
Reviewed By: Matthew Leeds



Warner New Media is working hard to help develop the CD-ROM market. It's spent millions of dollars developing products like the Audio Notes series, and its Desert Storm CD-ROM represents a bold new experiment in repackaging information, something Time/Warner has in abundance.

The disc contains more than six thousand screens of information, a deceptive number given the amount of double-spaced text on the disc. None the less, the generous numbers of photographs, both color and black-and-white, the audio recordings, the original dispatches from Time correspondents, and the drawings and maps all combine to provide a wealth of material.

All this material is organized and indexed chronologically and by subject matter. Timelines provide perspective on the events while the original dispatches (prior to editing into the final stories that appeared in Time magazine, which are also included) give some insight into the editor's role in shaping the public's view of the war.

Warner New Media has wisely abandoned HyperCard for this project and uses its own proprietary delivery engine. Its performance is a welcome improvement over earlier products, at least once I followed their advice and copied over about 8MB of data to my hard drive.

Pluses on the disc include the full set of relevant U.N. Resolutions, a copy of the Geneva Conventions, generally great photos and sound bites, and well-drawn sketches of the weapon systems used in the war. Minuses include some poor photos (the one of Peter Arnett looks like it was ripped off of an old passport), some

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June, 1991 P. 246

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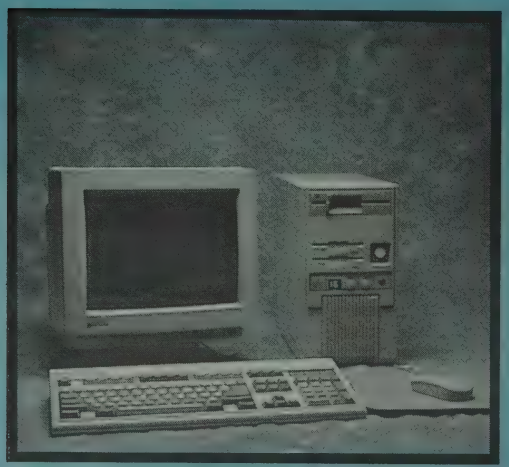

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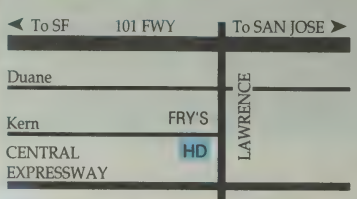

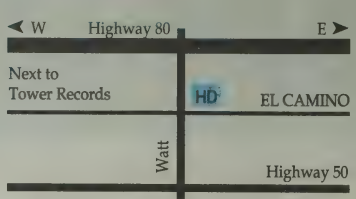

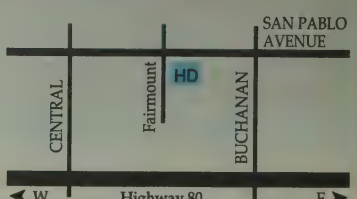

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audio caption mismatches for photos, and the lack of a bookmark command. Given the quality and range of the content, the indexing, and the very aggressive pricing, Warner New Media is well on its way to defining a new market. (Warner New Media, Inc., 3500 Olive Ave., Burbank, CA 91505. 818/955-9999)

FREEDOM OF PRESS LIGHT

Published By: Custom Applications
List Price: $98
Reviewed By: Matthew Leeds

Although the cost of PostScript printers has fallen dramatically in the last year, they are still out of reach for many users. For those who own a non-PostScript printer but are looking for better print results (and the advantages that PostScript output offers), Custom Applications has released a low-cost version of their software PostScript emulator.

Freedom of Press Light (FOP) lets you print PostScript files to dozens of printers. Some applications will create PostScript files directly rather than printing, with others you use the LaserWriter Chooser printer driver to "print to disk." FOP can then interpret the file and send it as a bitmap to your printer. If you are running Multifinder and have sufficient memory, this printing can be done in background.

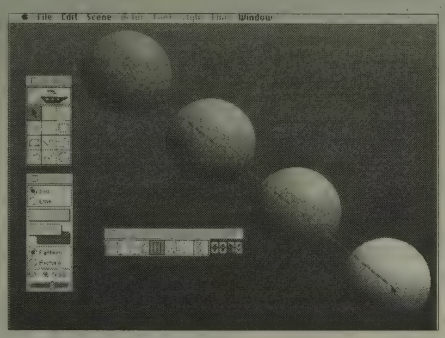
To use FOP, you need at least a Mac Plus, 2MB of memory (more for background printing), and a minimum of 2.5MB of hard disk space. Since Type 1 fonts are also supported, I recommend also using Adobe Type Manager. Bear in mind that emulating PostScript takes time and processing power, and that using FOP requires patience, especially with slower Macs. On the other hand, it's far cheaper than buying a PostScript cartridge for those printers that support them, and software emulation is the only option for those that don't.

I've run FOP on my DeskJet+ with excellent results. PageMaker files look very good, as do Illustrator files. FOP also offers preview to screen, including color preview on those systems that support color. Two other more expensive versions of FOP offer support for film recorders, more printers, and exotic devices like the Canon Color Laser Copier and Scitex. (Custom Applications, Inc., Bldg. 8, 900 Technology Park Dr., Billerica, MA 01821. 508/667-8585)

ANIMATION WORKS

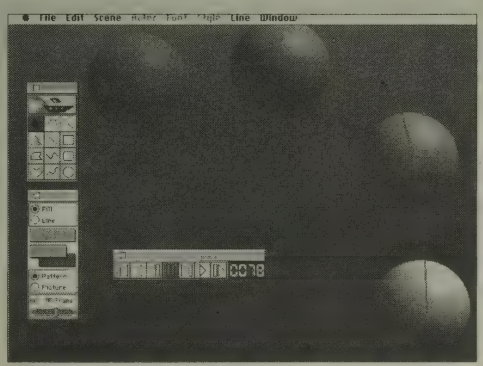
Published By: Gold Disk
List Price: $199.95
Reviewed By: Matthew Leeds

Affordable and powerful tools for animation have only recently started appearing on the Macintosh, thanks in part to the migration of Amiga-based technology to Macintosh programs. One such program is Animation Works from Gold Disk. Gold Disk is a well-respected publisher of Amiga applications, and its first entry in the Macintosh market shows that it has done its homework.



There are three major modules in Animation Works. The first is the Cel Editor, where animated characters are created and edited. A set of drawing tools is provided as well as an "onion skin" feature that lets you see the previous and/or next cel while working on a sequence. A registration tool is used to set registration points, this insures the correct positioning of each cel in a sequence.

The Background Editor is an 8-bit paint program with air brush, gradient fills, brushes; the standard set of tools. It reads and writes PICT files that are used as backgrounds for your animations. You can also import other programs' PICT files.



The Movie Editor lets you assemble the pieces of your animation. Backgrounds are placed, animated cel sequences are positioned, and their motion paths defined. Hierarchical paths can be created and set, allowing you, for example, to attach a bouncing ball to a basketball player and just set the motion path for the player; the ball will follow.

The Movie Editor also controls the wipes used in transitions between scenes; the timing of animations; settings for gravity, resilience, or acceleration of cel sequences; the use of sound in animations; color cycling; background scrolling; and looping. Animations can be saved as PICS files, a set of XCMDs are provided for using the animations in HyperCard, and a freely distributable Runtime Player program is also provided. There is a video tape tutorial, and the manual contains a prologue by a professional animator on basic animation techniques. Animation Works simplifies the learning curve for Macintosh-based animation. (Gold Disk, Inc., 5155 Spectrum Way, Unit 5, Mississauga, Ontario, Canada L4W 5A1, 416/602-4000)

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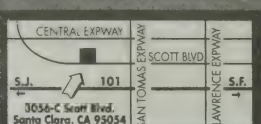

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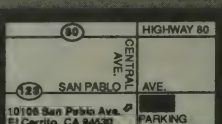

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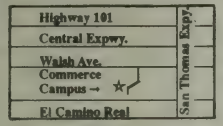

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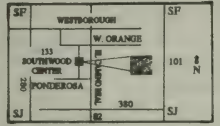

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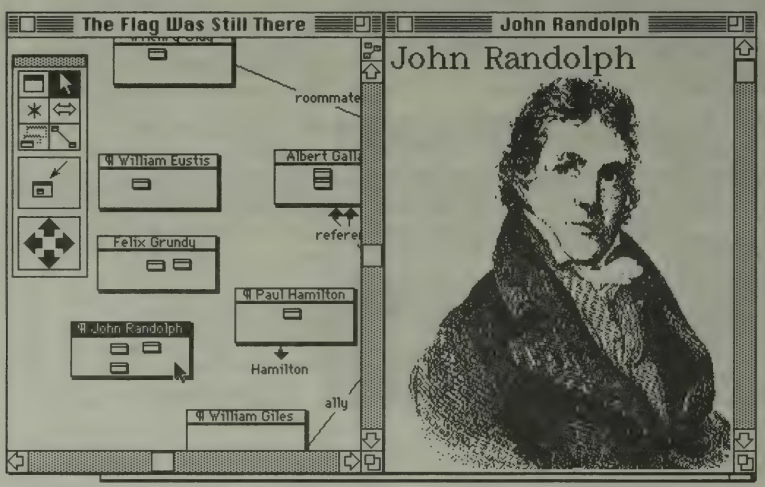
STORYSPACE

Published By: Eastgate Systems
List Price: $160.00, ten pack $495
Reviewed By: Matthew Leeds

Storyspace is a hypertext writing environment; think of it as a cross between HyperCard and an outline processor. It is specifically designed for the task of writing, of creatively interlinking text and illustrations quickly and easily. While HyperCard has good paint tools, but takes some programming to use as a hypertext environment, Storyspace has great linking tools that require no programming.

The basic concepts in Storyspace are familiar: Text is contained in "spaces," spaces are linked together, hotspots identify links, and the reader follows the links the author has created. But Storyspace goes far beyond these basics. It offers additional views of the document including a chart or outline view. It provides both text export and printing functions that let it be used as a writing tool. It includes power tools for building links



between text that will link all sections that contain a specific reference. It lets you build alternate paths through a document and protect access to those paths via passwords. It supports XCMDs and serial devices such as laserdisc players.

It can also create standalone documents that do not require a copy of Storyspace to be read, and Storyspace documents can be converted to HyperCard stacks. It supports the inclusion of illustrations with text, text formatting, and sound files. It can import text and break it up into manageable pieces. In addition to being a wonderful hypertext tool, Storyspace would make a excellent collaborative writing tool as comments or notes to text can be linked, hidden, displayed, inserted into standing text, or deleted; all without any programming. It would also make a great storyboarding tool for developing multimedia applications. (Eastgate Systems, Inc., PO Box 1307, Cambridge, MA 02238. 617/924-9044, 1-800-562-1638)

PC SOFTWARE REVIEW

UNITED STATES HISTORY ON CD-ROM

Published By: Bureau Development
List Price: $395
Reviewed By: Woody Liswood

If you are a history buff, history student, interested in Americana, or just have an occasional need to look up something about an event in US history, this CD-ROM may be just the thing for your library. Assuming, that is, that you already own a CD-ROM player for your computer.

This particular CD-ROM contains the entire text of 107 history books. It also contains over one thousand images.

The search and retrieval software for US History is easy to use. The menu system is the now typical menu bar across the top of the screen. There you can search for a word, an author, a subject, or even the title of an article. As you key in your words, you are shown an ever increasing word or phrase match in a dialog box under the pull-down menu. As you get close, you can also run your cursor directly to the correctly spelled item. It will tell you how many matches there are in the database. Pressing Return then takes you directly to the first of those items.

Other areas of history are covered in similar fashion—not great, super in-depth, technically detailed information, but lots about the major events with enough pictures to get you started.

After finding the information you need, a menu bar also appears at the bottom of the screen telling you what function keys are active and what they do when pressed. F7, for example, will print the article for you.

To view the accompanying images you should have at least a standard VGA monitor with 512K of memory, and your images will be displayed in 640 x 480 resolution with 256 colors. If you have only 256K, you must start USH using a separate command line, and the images will be

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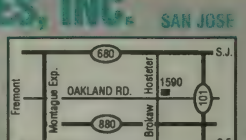

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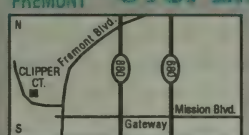

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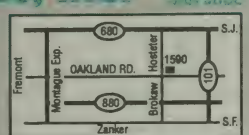

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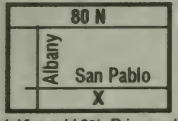

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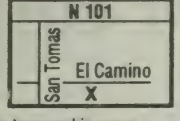

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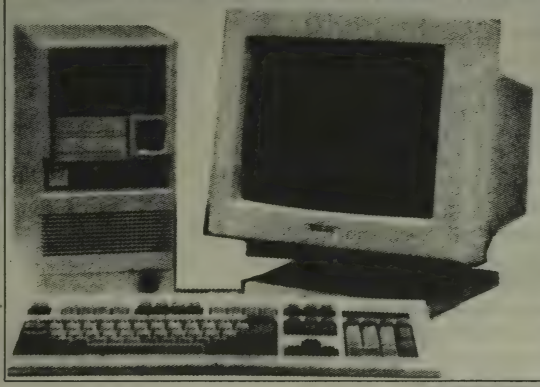

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displayed using 320 x 200 with 256 colors. I use either a 40MHz AMD 386 or a 25MHz 486. The images paint quickly, but not instantly across the screen. The slight delay is acceptable.

There are no sound bytes associated with this database.

The real strength of any database is in the information. I am particularly interested in the space program, so I decided to see what was included. Specifically, I decided to see how the first two manned space shots were covered.

I did not find any separate detailed information about these space shots, but there was considerable information along with some pictures about the history of NASA. There is a picture of President Kennedy as well as the famous *Life* magazine photo of the original seven astronauts. There was enough information to wet my appetite, but not enough to satisfy the hunger. The information on NASA came from a book about its first twenty-five years.

Other areas of history are covered in similar fashion—not great, super in-depth, technically detailed information, but lots about the major events with enough pictures to get you started.

All in all, an interesting database. It is definitely a better size than having all 107 books moulding on a shelf gathering dust in the back bedroom. (Bureau Development, Inc., 141 New Rd., Jarsippany, NJ. 201/808-2700)

ICP SOFTWARE INFORMATION DATABASE ON CD-ROM

Published By: ICP, Inc.
List Price: $400 for a single CD-ROM; $975 for a three-release yearly subscription
Reviewed By: Woody Liswood

There are multitudes of software programs out there, running on a wide variety of systems. If you, as I do, have the need to track down a program, of which you may not remember the name, the publisher, or even what system it runs on, ICP database can provide the answer you are looking for.

This database currently provides information on over eight thousand microcomputer packages, fifty-five hundred minicomputer applications, and thirty-five hundred mainframe packages. These products are produced by over four thousand vendors. The software used for search-and-retrieval is ROMWARE v2.2, from Nimbus Information Systems, using a top menu bar with pull-down menus.

The database can be searched by software category, product names, vendor name, hardware system, operating system, source language, product description, special configuration requirements, marketing contacts, telephone numbers, price, and number of clients.

When selecting special configuration, for example, you get a keyword list and can start to enter your keyword. As you key in the entry, the display jumps to a matching word. Browsing though the database, I discovered something called 2-button, and decided to see what information would be displayed.

If you search through the software categories, you find that Banking and Finance has 1015 entires, that Business Management has 1065 entires, and so on. Human Resource Management, for example, had 285 entires. I am interested in an HRIS program called ABRA 2000, so I decided to see what it had to say about this one.

A quick search provided this information:

SearchSet Total Records 1
Match 1
DB Rec# - 6,645 Dataset-SID CD-ROM, MAY 1991
Product: ABRA 2000 Human Resource System
Vendor: ABRA CADABRA SOFTWARE
Category: HUMAN RESOURCE MANAGEMENT
Personnel Management
Hardware Supported: Apple Macintosh| IBM PC-XT| IBM PC-AT| MS-DOS-based Hardware
Product Description:

ABRA 2000 is a comprehensive Human Resource System. More than seventy standard reports are provided, including salary reviews, salary analysis, benefits administration, dependents, COBRA, personal records, EEO, organizational structure, skills, workers' compensation, OSHA, and education. ABRA 2000 stores an unlimited job history and it tracks bonuses, license renewals, trainings, memberships, and injuries. A report writer and letter writer are included. Options include applicant tracking, attendance tracking, report writer, a Canadian version, and a multiuser version. A reseller's plan is available.

Operating Systems: MAC OS| PC-DOS| MS-DOS| XENIX
Source Languages: Not Specified
Number of Clients/Users: 2,500+
Special Config. Requirements: 640K for IBM PC, 1MB for Macintosh; dual floppies or hard disk; supports dBASE, Clipper and Foxbase

Marketing Contact: Abra Cadabra Software, Inc., 5510 9th Street N., St. Petersburg, FL 33703. (813)525-4400
Pricing: $495.00 (fewer than 75 employees), $995.00 Single User
Platform : MICROCOMPUTER
Product Number: P28584

I know the ABRA package quite well, This information was a reliable and accurate description of the product.

All in all, the ICP software CD-ROM provides megabytes of useful information. If you have the need to track this stuff down, this CD-ROM database should be part of your library. (ICP, Inc., 8900 Keystone Crossing, Suite 1100, Indianapolis, IN 46240-2183. 1-800-428-6179) ■

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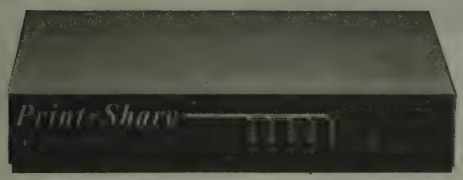

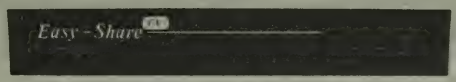

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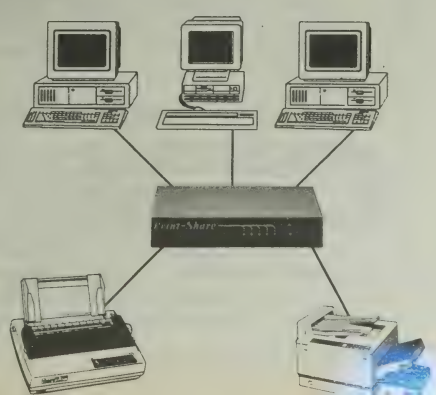

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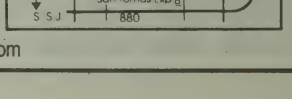

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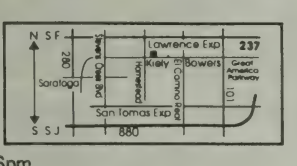

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Dynamic Presentations For Mac And PC

User-Friendly Multimedia From MacroMind/Paracomp

BY TONY REVEAUX

For most people, "multimedia" has meant powerful-but-formidable creation programs. Magic and Action! dip the learning curve down to the point where the largest portion of the work is done—short, punchy presentations for corporate communications, sales, and training.

Two sparkling new presentation programs—Magic for the Mac and Action! for the PC—can tell us a lot about the way the industry's going.

First, though each application was independently conceived, both developers perceived a similar need and are bringing their products to the market at the same time.

Second, Paracomp and MacroMind, the two companies that produced these packages, have merged, reflecting a trend of consolidation in the industry for more effective marketing, distribution, and support.

Third, multimedia is mainstreaming into user levels below professional authoring, in channels previously occupied by presentations.

Fourth, good Windows software is actually arriving, after "millions sold" meant mostly sleeping boxes.

Though Magic and Action! come from different programmatic gene pools—Magic in Belgium and Action! here—they are more alike than different with respect to the work they can help us to do. The market will ultimately decide how ready we really are for these tools, but they deliver low-cost, accessible, and effective means for dynamic communications, today. The new company is careful to use the "M word" cautiously, but Magic and Action! ***are*** multimedia applications, and good ones at that.

Once word processing was hard to learn; now we all can do it. For most people, "multimedia" has meant powerful-but-formidable creation programs like MacroMind Director, FilmMaker, and Authorware. Magic and Action! dip the learning curve down to the point where the largest portion of the work is done—short, punchy presentations for corporate communications, sales, and training.

CREATIVE COEXISTENCE

If it strikes you as odd to see the same company marketing two workalike products on the opposing formats of archrivals Mac and MS-DOS, welcome to the '90s. Even before the Apple/IBM accord, there's been a steady and productive crossover movement across the crumbling digital wall.

MacroMind Windows Player ($995) allows interactive MacroMind Director multimedia files to be played on IBM-compatible machines that support Microsoft Windows 3.0. The Macintosh continues to be the major authoring environment for multimedia, MIDI music, and

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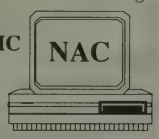

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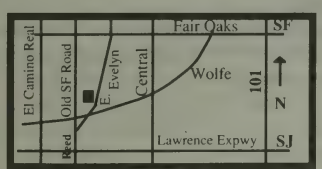

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RESOURCES:

Paracomp Magic, $395
MacroMind Action!, $495
MacroMind/Paracomp
600 Townsend, Suite 310W
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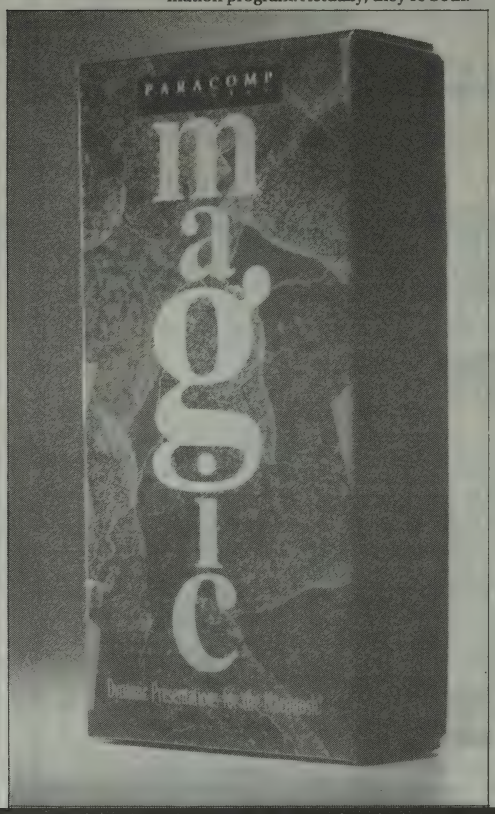
electronic publishing, but the audience of IBM-compatible users is enormous.

The average business user now enjoys the PostScript/laser printer quality of paper communications, using desktop publishing without being an "electronic publisher." Virtually every "presentation" program on any platform now offers some transition capabilities, but TV makes us want more. Now you can choose to include motion and sound in a presentation without becoming established as a "multimedia author." At this level, you should be able to do it on the machine you have on your desktop already, rather than buying another one.

By offering both Magic and Action!, MacroMind/Paracomp is expressing a trend of the '90s—parallel opportunities on companion platforms. Action! is positioned as a high-octane, point-'n'-shoot presentation package, Magic as an accessible-but-full-featured animation program. Actually, they're both.



Both Magic and Action! can be counted on to help you whip out quick presentations, but they also offer the means for creating very sophisticated multimedia documents if you want to spend the time.

One of the most important things they share is that they make excellent use of their respective interfaces—in spite of the different natures of their motion architectures: Magic is frame-based like videotape, and Action! is time-based like audiotape. If you're a Mac user, Magic will delight you with its lively and sophisticated control over shapes and motion as you tweak and nudge a scene to be just so. If you are a Windows driver, Action! will deliver the ease of use, speed, power, and clarity you've been told to expect in Windows applications. Both Magic and Action! can be counted on to help you whip out quick presentations, but they also offer the means for creating very sophisticated multimedia documents if you want to spend the time.

The companies' merger has already produced the library of templates common to both programs. With ten families of forms that have twelve scenes each, there are more than a hundred different templates that can provide plug-'n'-play presentation documents, where you just add the text and make some minor design choices. Then it's showtime. (These templates were produced in both Macintosh and Windows versions by ReadyToGo, a San Francisco-based software studio. This reflects another industry trend—the Mac authoring community is cranking out Windows versions of its software like hotcakes, and writing new product for both Mac and Windows at the same time. They say that the measure of how well a Windows interface works in a program is judged by how close it comes to the Mac.)

USING MAGIC

Paracomp Magic is not the long-anticipated "Director Lite" package. It does share the frame-based structure of Director, and Magic's Cue palette operates on a similar approach to Director's Score.

In style, it is closer to the French-designed FilmMaker, but Magic has its own unique character—sort of like the Adobe Illustrator of multimedia in the fine-tuned precision, shaping, and control it makes available to the user, but with the accessibility of MacPaint.

You need a Mac with at least 2MB of RAM (four is better) and a hard disk. Magic starts out with a full palette of six tools for the graphic creation of "Actors" objects and backgrounds, including text and an eye dropper tool. A transparency slider control allows you to set a transparency percentage to any selected line or fill, though a transparent Actor may not move as smoothly as one with an opaque "Costume."

Magic's path-based motion structure is impressive. You can create a path from the tool palette, such as an oval or a rectangle, and the Actor will hoof it on cue. Once you have a path of any shape or length, you can go into the Move mode and reshape and edit it, and apply curvature to different points of the path as a Bezier line. This means, for instance, that you can make a star-shaped path that would trace around a company logo that is a star.

The Pan function allows a sophisticated effect of creating a moving background by animating the actor across the background. The path can go off-screen, so that objects can fly in and out of the frame.

The resizable Cue palette is like a shrink-and-stretch bar chart that contains the "Lifespans" or Move Bars of each Actor and background. There, you can coordinate the continuity of the scene and add single channel spot sound effects. Twelve transitions can be applied independently to line and to fill, including a Movie transition which can import a motion file to paste in a scene, but no dissolve. A VCR-type Control Palette gives you frame-by-frame control and frame-count. The Linking function allows for scene-to-scene continuity; it also provides a HyperCard-like interactivity in creating "buttons" that allow you to stop and start events on the screen with a mouseclick.

ACTION! IN ACTION

MacroMind Action! presents a crisp and tough interface. At first, it looks like another PC-type presentation program, but it turns out to have a Corvette engine lurking under the Chevette hood.

You'll need a 286, 386 (386SX or 386DX), or higher PC running Windows 3.0, mouse, hard disk, one 3.5" or 5.25" disk drive, 2MB of RAM, a VGA or 8514/A graphics card or 256-color video card, and a sound card if you want to be heard.

Action!'s linear path-based motion is measured in time. Each

Continued on page 203

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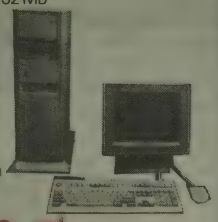

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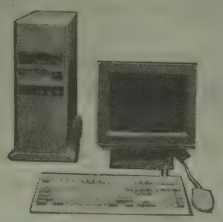

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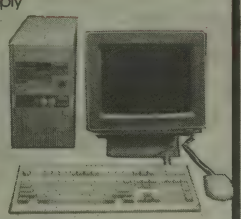

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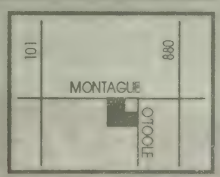

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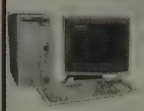

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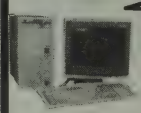

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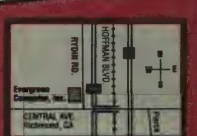

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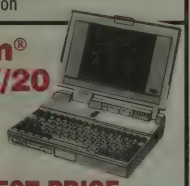

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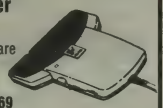

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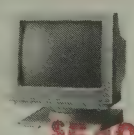

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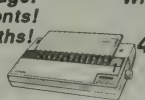

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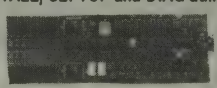

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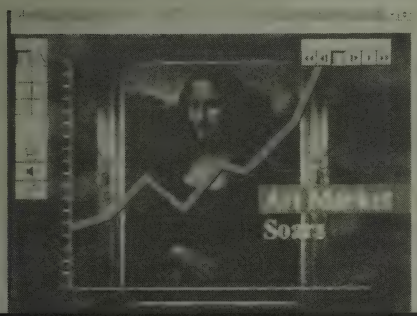
Continued from page 198

path of action has an ease-in and ease-out which smooths the continuity. The VCR-type Control Panel offers visible control over the scene or selected object with enter, hold, and exit; in the Hold mode, you can control pause and resume. The Tool Palette has text and drawing tools for creating objects; after creating a path, you can edit it with the Path Editor.

In the Timeline window, you can invoke a compressed time mode in the continuity, which allows you to apply proportional



Because Apple has engineered QuickTime with a basic code that will enable it to be platform-independent, you may find yourself pasting in QuickTimes that were authored in Action!, and vice versa.

shrinking and stretching in the time duration of a scene, or layers of a scene. There is a library of thirty-five transitions, including a dissolve. In the hold position, there are some "light" effects, such as sparkling highlights, that can be applied to an object or other part of the scene. Any object can be designated as a "button" for interactive selection in going from one linked scene to another.

I found the Content List intriguing; it represents the contents of a presentation in the form of a hierarchical outline with icons for scenes, objects, text, movies, sound, grouped objects, graphics, drawn objects, and buttons. You can edit names in the Content List, and click and drag on the icons to move them around. It reminds me of the View by Name function in Apple's System 7.

Not only does Action! have digitized sound in two separate channels, it has a CD audio link. With your PC connected to a CD-ROM player, you can choose a track from an audio CD and paste that in as a sound file effect within a scene. Another very impressive ability here is the Metafile, where you can import a file like a chart from Microsoft Excel and "explode" it into its component parts. Then you can animate each bar or pie wedge independently within your Action! scene. That capability for the Mac will be available under Apple's System 7 with "Apple events" which are based upon Inter-Application Communication (IAC) links.

If you have an NTSC or PAL video card in your box you can "print to video"—copy your Action! presentation on to videotape. Action! should be a frequent flyer on Microsoft's Multimedia PC systems.

WHICH ONE'S FOR YOU? WHAT MACHINE DO YOU HAVE?

Both programs can also import clip art, PICT graphics, sound files, and certain motion documents. In Magic, you can import FilmMaker sequences and MacroMind Director movies in MacroMind/Paracomp's QuickPICS, or PICS Animation Compiler. The Action! package includes the ClipMedia library of sounds, graphics, and some converted movies. Using the Gaffer function in MacroMind Windows Player, you can convert Director movies and import them into Action!

Apple's QuickTime, a new photo, animation, and motion video compression and playback format, will be available and in general use by the second quarter of '92. QuickTime movies can be played back on a "regular" Macintosh, and, like PICS files, they can be incorporated within a Magic scene. You may very well author documents in Magic and then distribute them as QuickTime movies instead of runtime Magic documents. Because Apple has engineered QuickTime with a basic code that will enable it to be platform-independent, you may find yourself pasting in QuickTimes that were authored in Action!, and vice versa. In a typical, mixed-platform, "normal" office, presentations and dynamic communications may be batted back and forth in streaks of QuickTime.

Each program has a couple of things the other doesn't, but they even out in the spectrum of creation, editing, and display capabilities needed to do the job. Which is the better program? To answer that, just pause to examine the computer on your desk. If it's a Mac, choose Magic; if it's a Windows PC, choose Action!. ■

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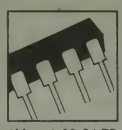

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Tips And More Tips

Disk Wisdom, The Four Mice Of The Apocalypse, And Other Esoterica

BY DAVID MORGENSTERN

I've gotten a complaint that I've been ignoring tips. It's a bad rap, I swear!

Well, maybe there's a tablespoon's-worth of truth. Tips take time to ripen off the grapevine. You bite in too soon, and the tip will be sour, full of bad information. Wait too long, and the problem will have been fixed in a maintenance upgrade. But I listen seriously to any reader's gripe—even when it comes on the back of a used paper plate, written in crayon.

SCSI WISE, POUND FOOLISH

Suppose your Uncle Manny calls you up with great news. While cleaning out his hall closet, he found a used SCSI drive buried underneath a stack of software manuals and the mountain of crummy ties you've given him over the years. He "wants that you should have it." What a guilt trip!

BMUG

But the formatting software that went along with the hard disk has inexplicably vanished, and probably wouldn't have worked with new system software anyway. The company is either no longer returning phone calls, or is in the brick packaging business. What's to do?

Some hard drive companies have gotten smart, and offer their driver software as a separate product. These utilities can format, test, and partition almost every hard disk on the market. Early versions of these products were sometimes confusing, and required an intimate knowledge of SCSI engineering. Today's packages are much friendlier, with built-in help screens. LaCie's Silverlining and FWB's Hard Disk Toolkit are two well-known examples of the breed. But you pay a substantial price for this privilege and reliability.

Some users have been cutting corners and setting up their generic drives the cheap way—by hacking the Apple formatter, HD SC Setup. The software contains a table of drives that can be patched by knowledgeable code jockeys. Apple has been accused of hiding this information, and protecting their drive secrets.

Although this seems to make sense given past behavior, there's no smoking bun in the oven. I will always try to give you the know-how, and means, to save a buck, but not this time. Altering HD Setup is not a good thing to do to your drive and its data!

A SCSI formatter determines a drive's formatting and operating parameters, then formats the drive. There are options involved in this process, based on the particular drive, computer model, and software driver. You might recognize some of the terminology involved—interleave, cache, block size, unit attention, and many more.

Apple drives have all of these parameters established as defaults in a little card, called firmware. This reduces the need for drive-specific code in HD Setup—information that's required in commercial formatters. Setup asks the drive for information about itself, which returns a reply that identifies it as an Apple drive. HD Setup relies on the default parameters of the Apple firmware, and only checks to see what flavor of Macintosh you're using to determine the correct interleave for the format.

A non-Apple drive used with a patched HD Setup, would likely have different design parameters than expected. SCSI drives are not utterly generic, and require unique formatting and driver code. Some drives have a "feature" that causes a pause in the middle of a block transfer, which can cause problems under certain conditions. A driver for this brand of disk must expect this hiccup, and compensate for it. Driveware expecting a pause would not work on others with steadier breathing.

Some drives have specific features that can boost their performance, such as caches. The operation of the cache is established at format time, and the driver software may not be able to take advantage of the cache if the setup is incorrect. Other problems may occur, resulting in data loss.

Apple handles some parameters differently than the rest of the industry. They disable "Unit Attention" on their drives, instead of the standard Respond setting. The symptom of this conflict will be a hung drive at boot time.

Even different lines of drives produced by a single manufacturer can have different driveware needs. The Quantum Pro series of drives does not completely respond to a standard format command. If the drive has been previously formatted, the command is ignored. Unfortunately, the low-level format is essential to map out any bad blocks on the disk. It needs a special bit set before the FORMAT command will take effect.

Whole bunches of useful and important things happen when you use Shut Down. The system quits each application you're running, if you're in MultiFinder or System 7. This gives you the opportunity to save your work, if you've forgotten. It's easy to forget open documents in System 7 with the new Hide feature.

Hopefully, I've persuaded you against fooling with the HD Setup application, but please keep up the good work digging into other programs. There's a time and place for any hack, my father told me once. Just not on

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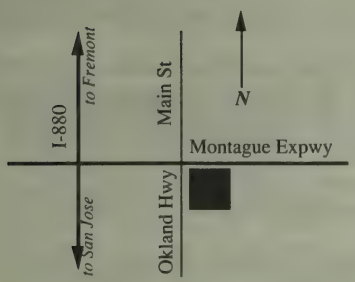

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A BAD ATTITUDE ON SYSTEM 7

One of the new features in System 7 is the way it treats defective floppy disks. In previous systems, a disk with bad sectors was rejected during formatting. The only way around this behavior was to use BAD 1.1, a shareware extension by Giuseppe Garnevale from Italy. BAD, and System 7, lock out the rotten parts by telling the disk that there's something already written there. Although this reduces the space available on the disk for your files, it makes the disk usable as media, instead of a paperweight.

Someone asked an intriguing question at a BMUG meeting. When a disk formatted under System 7 is taken to a machine running 6.0x, a new desktop file is created for the disk. System 7 uses a different way of handling the desktop that older versions don't know about. Sometimes it will claim that the disk needs "minor repairs," but that's nothing to be concerned about. The real question was—will the older system versions honor the bad block bondage, or will it set them free to corrupt our fresh data?

Rest easy. Since the defective parts have been marked as being used, they will not appear available for any file that is subsequently written to the disk. But if you attempt to erase the disk under System 6.0x, then it will fail, and the disk will no longer be usable. If you're not running System 7, give BAD a try. It's available on BMUG Utilities D1 disk.

UPCOMING EVENTS:

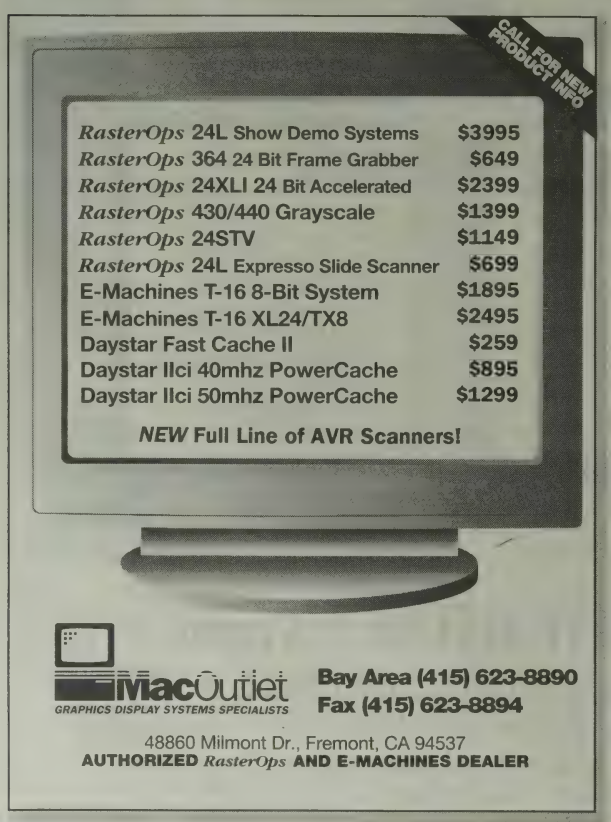
November 7	Mobius Ethernet Display System, Claris Claris Works.
November 14	BMUG GUI-Fest '91 at UC Pauley Ballroom. 10 am–5 pm. Meeting follows. Speaker TBA.
November 21	Radius new products, Deneba Software Canvas 3.0.
November 24	BMUG West at Exploratorium museum in San Francisco. MicroStrategy EISToolkit (business simulation).
November 28	Thanksgiving holiday. No BMUG meeting.

Call the BMUG Announcement Line for information about BMUG activities. (510)849-9114.

MACNUMEROLOGY

Steve Klingsporn relayed the following news, handed him on a Chicago street corner.

"In October 1991, Jesus is coming again! '...Here is the wisdom. Let him who has understanding calculate the number of the beast, for the number is that of a man, and his number is six hundred and sixty-six.' (Revelations 13:17–18)
Soon money will be useless and in place of it, the mark will be put on the forehead or on the right hand, and this will be the only way to buy and sell. Bar codes of U.P.C. is the 666 mark and is already all over supermarkets, hospitals, and libraries. The computer itself is #666.
A=6, B=12, C=18, ... Z=156.
COMPUTER = 18 + 90 + 78 + 96 + 126 + 120 + 30 + 108 = 666
People & Sin=666, Lucifer & Hell=666, Devil & Dragon=666, Mark of Beast=666, Bar Code of U.P.C. mark is 666. [There followed a picture of a man with a bar code on his forehead.]
The computer is golden calf of this new age. The laser beam number given will distribute number to the body in 1/ 1,000,000,000 of a second.
Computer, his nickname is 'the beast.' The 'Beast' is the nickname for the Super Computer at the E.E.C. Center in Belgium, which will control all the people in the whole world..."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Hard Drive	330 MB	330 MB	40 MB	40 MB	40 MB
Drive A	5 1/4" 1.2 MB	5 1/4" 1.2 MB	1.2 or 1.44 MB	1.2 or 1.44 MB	1.2 or 1.44MB
Drive B	3 1/2" 1.44 MB	3 1/2" 1.44 MB	-	-	-
Video Card	1024x768	1024x768	800x600	800x600	800x600
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286SX-12B	1 MB		C&T	IDE2	1.2 or 1.44	2S,1P	Yes	Vertical/200W	299

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1239A	215 MB, 15ms	IDE	645
Toshiba			
234	100 MB, 16ms	IDE	$369

Western Digital

WD93044	42 MB, 25ms	IDE	$179
WD280A	84 MB, 18ms	IDE	299
WD2120	125 MB, 16ms	IDE	375
WD4200	215 MB, 16ms	IDE	625

Disk Controllers

IDE2	2 FD, 2 HD, 16 Bit, IDE	$19
IDE4	4 FD, 2 HD, 16 Bit, IDE	39
Ultrastor	2 FD, 2 HD, 16 Bit, ESDI 32K Cache	155

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BTC 5339SX	102 Key	$35
BTC 7039R	102 Key	45

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Goldstar 3051	14" VGA 640x480, 0.51mm	$209
Goldstar 1430	14" VGA 640x480, 0.31mm	289
Goldstar 1460	14" VGA 1024x768, 0.28mm	329
Supertron 1411	14" Mono, paper white	99
Supertron 1421	14" Mono, amber	99
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MS-DOS 5.0	75

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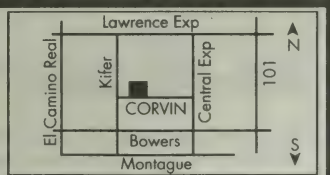

There's no doubt that there's an unfilled market for Revelations prediction software. Here's some free advice for enterprising programmers. A useful utility would be an alpha-numeric calculator to figure names more accurately. It would help if the calculator supported ASCII, as well as the new UniCode 16-bit character set.

A complete Revelations simulation would be an ambitious piece of work. The text describes attributes of specific persons and nations. The program might look something like Risk, or Strategic Conquest, with a nice color map. Updates would include profiles of world leaders, like Gorby, Bush, or Steve Jobs, for easy insertion in the simulation.

Let's see—Apple & IBM = 6 + 78 + 78...

BYTES AND PIECES

•A couple of years ago, Apple Developer Services wanted to become a byte more efficient at getting information out to programmers. Fortunately, they also had a considerable inventory of CD players in the warehouse, so they started releasing new system software and utilities on CD. They threw everything on them—every system version ever shipped, even foreign flavors, technical notes, and bug fixes. They have great titles, including *Phil & Dave's Excellent CD, A Disc Called Wanda, Discy Business, Night of the Living Disc, Gorillas in the Disc,* and *Lord of the Files.*

•For some inexplicable reason, I keep meeting people who refuse to shut down their Macintoshes by selecting the appropriate command from the Special menu in the Finder. This is a foolish thing to do (or not to do), and doesn't make them seem "grown up," or a power user in the least bit. I don't know if the people that just flick the switch off are used to other non-Mac computers, or if it's just a contrary act.

Whole bunches of useful and important things happen when you use Shut Down. The most familiar action is that the system quits each application you're running, if you're in MultiFinder or System 7. This gives you the opportunity to save your work, if you've forgotten. It's easy to forget open documents in System 7 with the new Hide feature.

But what if you're not running MultiFinder? Any number of programs, especially those frightening Extensions (Inits), may have installed a routine to be run at shutdown. These can be useful activity logs for business records, or silly sounds with SoundMaster. They also may park the heads of your disk drive!

Another important action concerns the floppy and hard disks you're using. With a proper bedtime, mounted disks are marked as having had a normal shutdown. Without this stamp of approval, your startup will take noticeably longer as the disk is checked. So assert yourself in some other more positive manner—like joining BMUG.

•You're shooting the office party video, or Thanksgiving dinner, and discover you left the S-video cable at home. What do you do? Walk over to the closest Macintosh (SE or later), and borrow the Apple Desktop Bus (ADB) cable that connects the keyboard to the rear of the CPU. It's the same four-pin cable and will work fine. Be sure to return it when you're done!

•Be sure and join the fun at the BMUG GUI-Fest, November 14th. This is where users get to show off their skills, and everyone has a great time. This year we're going to have a smorgasbord of graphic user interfaces (GUI), with Macintosh galore, Windows, pen-based systems, and more. There will be the usual informative discussion groups,

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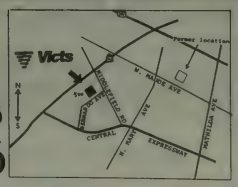

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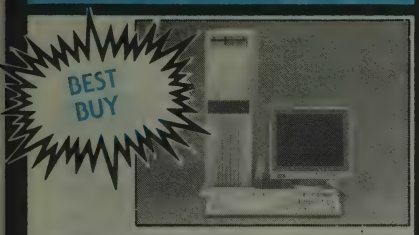

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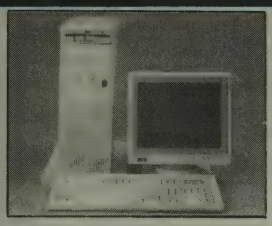

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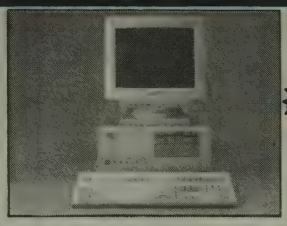

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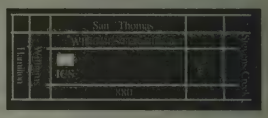

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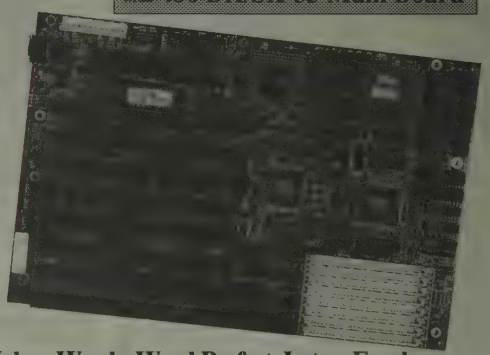

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including the infamous Stump the HelpLine Contest! It'll be held in the Pauley Ballroom of the UC (Berkeley) Student Union, on the campus. Call the BMUG announcement phoneline for more details.

SHAREWARE SPOTLIGHT

Art Lau, our disk librarian, has been hard at work revising the BMUG disk library. This monumental effort is done every few years, especially now that the library has grown to over 700 disks. The old programs that are showing their age are being retired and thrown on the scrapheap. We've held several "crash parties" to test the programs in the library for 32-bit cleanliness, and compatibility with the latest system software.

Here are a few utilities from our collection that you might find useful:

•Add/Strip 2.8.9, shareware fee $25. This utility by Jon Wind has all the bells and whistles for text file manipulation needed to automatically clean up files destined for import or export. It has an extensive online help, and can process all the files in a selected folder. Add/Strip is available on BMUG Text B1 disk.

•B&C Encyclopedia, shareware fee $15. The B&C stands for "Bomb and Crash" in this very informative stack written by Erik Thauvin for MacSpect, Inc. of San Francisco. It gives an explanation of what might have caused the crash, and a course of action to follow.

Here's what it says about System failure—Error number 25, Memory Allocation Error.

"The program had requested a chunk of memory, but couldn't find enough available memory for the program to use.

This means you are:

1) running out of memory.

2) the Mac is acting like you were out of RAM.

This is usually due to a programming problem, where the programmer couldn't keep track of the memory used by the program.

=>Restart, if the problem persists, please contact the author/publisher."

B & C Encyclopedia is available on BMUG Utilities L disk.

•PopChar 1.9, freeware (postcard requested) by Günther Blaschek of Austria. This is an elegant Control Panel (CDEV) that always helps you find the correct "hidden" character in the keyboard. When the program is installed, and the mouse held down in a specified corner, a window appears with the complete character set of the currently used font. The mouse is moved to select the required symbol, and it's placed in your document when you lift up your finger. Available on BMUG Text C1 disk. ■

What Is BMUG?

BMUG is an educational, nonprofit, consumer advocacy group organized to share information, and provide critical direction to users and developers in the computer community worldwide.

Like any growing organization, it is many different things to its eleven thousand international members. BMUG supports many Special Interest Groups (SIGs), a Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6–9 (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG office, 2055 Center Street (a half block from the BART station) is open to the public 9 am–5 pm. Please come by and say hello, meet other members, and hang out.

The BMUG HelpLine, (510)540-1742, and our fax number, (510)849-9026, provide technical assistance and telephonic hand-holding during business hours (11 am–5 pm). If your question can't be answered on the spot, we try to get you in touch with someone who can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around with 700+ double-sided disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM™ Version II*, our library and more on CD-ROM.

Our sixteen-line BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would be able to get in touch with us wherever you are, as well as send mail to users everywhere! BMUG is a part of the international USENET network (ucbvax!garnet!bmug) or (user.name.bmug@garnet.berkeley.edu). With our sixteen-line capability you are now able to have access to BMUG almost twenty-four hours a day. It's easy to use, fun, and a great resource.

To get some further information about BMUG please write to: BMUG, 1442A Walnut Street #62, Berkeley, CA 94709. If you prefer to phone our business office call (510)549-BMUG, or FAX (510)849-9026.

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Superbase's Uncertain Future

Plus: The Towering Amiga And Other News

BY MATTHEW LEEDS

AMIGA

Superbase has always held the preeminent position as the powerhouse database program for the Amiga. It has always offered an alluring mix of ease of use with unbridled power for those who invest the time to learn its programming language.

The latest version, Superbase Professional 4, improves on prior versions and adds a multitude of new features. These include a much expanded Forms Designer, several hundred pages of new documentation, an improved internal storage format, better report generation capabilities, and the removal of all copy protection.

The first release of this new version had a plethora of bugs, and an update has been sent out to all registered users. This update fixes many of the bugs users have been complaining about, but long-term support for the Amiga version of Superbase may be in question.

Precision Software has been acquired by Software Publishing Corporation, which was very interested in the Windows version of Superbase but has no presence in the Amiga market. SPC has stated that it plans to sell off the Amiga version, but so far there have been no takers. While it's reasonable to assume that a buyer will eventually be found, the delay in that process, along with the time it will take for a new team of programmers to get up to speed on the Superbase source code, raises serious doubts about timely delivery of any additional maintenance releases.

RESOURCES:

Precision Inc.
8404 Sterling St.,
Suite A
Irving, TX 75063

IDG Books
155 Bovet Rd.,
Suite 730
San Mateo, CA 94402

THE OFFICIAL AMIGAVISION HANDBOOK

IDG Books has released another of its excellent AmigaWorld volumes, this one titled *The Official AmigaVision Handbook*. It's written by Lou Wallace, the senior technology editor at *AmigaWorld* magazine, whose experience with AmigaVision started with early beta testing of the program and has progressed with each release of a new version of the software. Since the manual included with the program does not cover programming in great detail—and since the manual is obsolete in some places because of upgrades—this book is a great source of information not available elsewhere.

Copyright © 1991. All rights reserved. *Matthew Leeds has been involved in the high-tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.*

AMIGA TOWER

For those of you living in a cave the last few months, Commodore has been working on a tower version of the 3000, dubbed the 3000T. It offers room for two 3.5" drives and up to five 5.25" drives, and lots of expansion slots for cards. It has a built-in speaker, key-controlled mouse and keyboard to lock out unauthorized users, and a more powerful power supply. The standard configuration ships with a 100MB hard drive, single floppy drive, and 2MB of memory. The base price is about $4500, and units should be shipping as you read this.

The tower Amiga is likely to be the first Amiga to ship with the release version of 2.0 Kickstart in ROM. One of the more obscure benefits of 2.0 is the inclusion of scalable font technology. This allows properly written programs to request any arbitrary point size font from the system and have it rendered "on the fly" by the operating system.

Commodore has adopted the Agfa Intellifont system, also used in Hewlett-Packard's PCL 5 printer language (found in the LaserJet III series of printers). This will spark a new round of development for Amiga font providers as they design font libraries based on this technology, "port" fonts from other environments, and develop font creation and editing applications.

It will also inspire a new round of upgrades from mainstream Amiga developers as they roll support for this into their existing applications.

It will also drive owners of slower Amigas crazy as they wait for the machine to render yet another font at 80 point size for their video titling application.

DEVCON

Commodore took an interesting tack for the recent North American

Commodore has adopted the Agfa Intellifont system, also used in Hewlett-Packard's PCL 5 printer language. This will spark a new round of development for Amiga font providers.

Amiga Mama Launches Desktop Video Into Orbit From Computer Showcase

The Bottom Line...

Although the Mac is the best thing since sliced bread as personal computers go, for Desktop Video it's a mere crumb compared to the Toaster.

-MacUser Aug. '91

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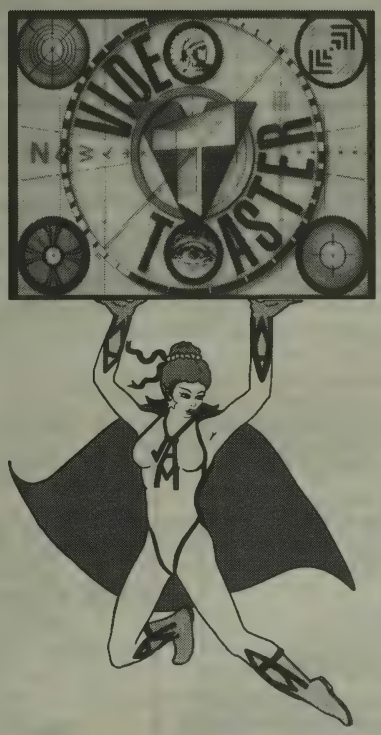

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What exactly is a Video Toaster?

It's the world's first all-in-one broadcast-quality video production studio. The Video Toaster has everything you need to give your videos the broadcast look of network TV. Every $4495 Video Toaster comes complete with * Four Input Production Switcher * Digital Video Effects * 35 ns Character Generator * 16.8 million Color Paint System * Color Processor * Two 24-bit Frame Buffers * D2-Quality Still Store * 3D Modeling, Rendering and Animation

Macintosh owners - take a look . . . .

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Computer Showcase

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Saturday 10-5pm

The Desktop Video Center

This ad was designed at Computer Showcase on the Amiga using Deluxe Paint III, Prof. Page, Pro Draw and lots of imagination.
Artwork for Amiga Mama by Penelope Terry of Ukiah, Calif. (707)468-8774.

Amiga Developers Conference—they required all attendees (including press) to sign a very restrictive nondisclosure agreement. This was in direct opposition to the attitude at the last few DevCons, where attendees were told to use their good judgment regarding public disclosure and discussion of information provided.

About 25% of the sessions at DevCon were devoted to developing and marketing applications for the overseas market. It is no secret that the North American Amiga market is in big trouble.

After the last two DevCons, the Amiga press basically provided point-by-point coverage of every new piece of technology discussed. At this DevCon, Commodore wanted to discuss its plans for the future, but did not want the general public to know what's coming, or when. This is understandable, as buying patterns are affected by the public's perception of when an Amiga 4000 might arrive, or how Commodore will address the need for a 24-bit display standard.

While I did not attend DevCon, I've been given an inside peek at much of what was covered, and I will honor Commodore's request for privacy on that material, even though they did not request that I sign a nondisclosure. What I can tell you is that Commodore is working on the overall issue of standards, not only in display technology, but in other areas where multiple vendors are supplying competing and exclusive solutions to problems that need to be addressed universally.

THE NORTH AMERICAN AMIGA MARKET

I can also tell you that about 25% of the sessions at DevCon were devoted to developing and marketing applications for the overseas market. It is no secret that the North American Amiga market is in big trouble. The sales in the last twelve months were dismal. The North American market accounts for only about 15% of the worldwide market, and American developers who do not sell in Europe are in big trouble.

The discouraging perception is that Commodore is unable and/or unwilling to do anything about this. Little or no marketing is currently going on here for the Amiga, and what funds are being spent are being spent on CDTV. While Apple and IBM make great strides in the home market, moving into mass merchandising channels, Commodore seems content to watch its market share shrink, with success only in the desktop video market driven by NewTek's Video Toaster.

On the plus side, Commodore's public relations firm has finally promised to send me a CDTV unit for review. Although the all too familiar, "it should be there in about two weeks" was mentioned, I suspect my six months' standing request may finally be acted on. If indeed a machine (with some interesting software) does show up I'll start coverage on CDTV titles next year. ■

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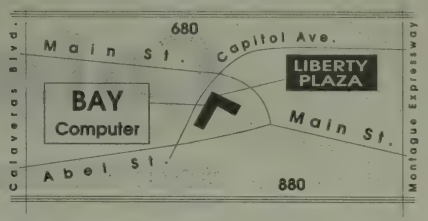

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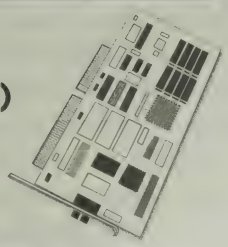

PC MAGAZINE EDITORS'S CHOICE

7GRAPHICS (408) 956-9691

RESOURCES

Calendar Of Events

OCTOBER

October 25 Novell & Compaq—Seminar On Optimizing Today's Technology & Planning For The Future. San Francisco. Computown. Call: (415)394-8888, ext. 232.

October 26 Computer Show & Sale. Vallejo. MarketPro. Call: (415)388-8893.

October 26–27 The PC Weekend: A Hands-on Intro Seminar To PC Hardware, WordPerfect 5.1, And Lotus 1-2-3. San Francisco. The Software Training Group. Call: (415)397-4158.

October 27 Computer Show & Sale. Sacramento. MarketPro. Call: (415)388-8893.

October 28 Quattro Pro Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

October 28–30 NetWare 386 Administration Class. San Francisco. Abacus Training. Call: (415)759-9508.

October 29 Building On Microsoft Windows 3.0 Presentation. San Francisco. Egghead Discount Software. Call: (408)257-8000.

October 29 IBM PC And DOS Training Seminar. San Francisco. SFSU Extended Education. Call: (415)338-1373.

October 29 Multimate 4 Intro Class. Santa Clara. Productivity Point International. Call: (408)287-8827.

October 29 WordPerfect 5.1 Macros Course. San Francisco. The Software Training Group. Call: (415)397-4158.

October 30 Merge Mailing In Russia: New Markets, Old Customs Workshops. San Francisco. BOSS-America. Call: (415)626-6702, ext. 2.

October 30–November 1 The Analog & Mixed-Signal Design Conference. Santa Clara. *Computer Design* magazine. Call: (415)905-2356.

October 30–November 1 SQL—System Admin Course. Alameda. SymPro University. Call: (510)865-0600.

October 31 Object Vision Level 1 Class. San Francisco. PC Etcetera. Call: (415)291-8585.

October 31 Word For Windows Desktop Publishing Class. Santa Clara. Productivity Point International. Call: (408)287-8827.

NOVEMBER

November 1 Harvard Graphics 3.0 Intro Course. San Francisco. The Software Training Group. Call: (415)397-4158.

November 1 Intro To DOS 5.0 Course. San Francisco. The Software Training Group. Call: (415)397-4158.

November 2 Computer Show & Sale. Santa Clara County Fairgrounds. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

November 2 Intro To ISDN Seminar. San Francisco. SFSU Extended Education. Call: (415)338-1373.

November 2 Lotus Macro Class. San Francisco. Pioneer Computer. Call: (415)543-4680.

November 2 MacroMind MediaMaker Seminar. San Jose. Masters Institute. Call: (408)441-1800.

November 3 Computer Show & Sale. Concord. MarketPro. Call: (415)388-8893.

November 4 Intro To WordPerfect Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

November 4 Novell NetWare Operator Training Course. Alameda. SymPro University. Call: (510)865-0600.

November 4 OS/2—Basics Course. Alameda. SymPro University. Call: (510)865-0600.

November 4 Training Classes On WordPerfect, Lotus, Quattro Pro, Paradox, And Windows. San Francisco. MicroAge. Call: (415)393-9600.

November 4–5 Aldus PageMaker For PC Class. San Francisco. Informative Edge. Call: (415)392-5544.

November 5 Intro To DOS Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

November 5 & 12 Telecommunications Systems Selection Seminar. San Francisco. SFSU Extended Education. Call: (415)338-1373.

Continued

NOVEMBER 2–3

SAN FRANCISCO BAY AREA BOOK FESTIVAL

Concourse Exhibition Center

The second annual San Francisco Bay Area Book Festival offers a free weekend of events celebrating literacy and the Bay Area book community. This year features a dialogue with Guy Kawasaki, author of *The Macintosh Way* and *Building Your Dream*, and Sandra Kurtzig, founder of A.S.K. Computers and author of *CEO*. The festival also presents "Desktop Publishing in the '90s: New Technologies/New Careers" seminar. Festival hours are 10 am–6 pm. For more information, call: (415)861-BOOK.

FRAMEMAKER TRAINING FOR THE MACINTOSH

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Masters Institute introduces its FrameMaker for the Macintosh training program. Classes, scheduled through December, 1991, consists of five modules taught over four days. The modules include Using Templates, Modifying Templates, Graphics and Anchored Frames, Creating Templates, and Book Building. FrameMaker classes are held Monday through Thursday from 9 am to 5 pm at the Masters Institute's San Jose facility. Call: (408)441-1800 ext. 241.

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Calendar Of Events continued

November 5–7 OS/2—Support Engineer Course. Alameda. SymPro University. Call: (510)865-0600.

November 6 Excel For Windows Class. San Francisco. Informative Edge. Call: (415)392-5544.

November 6 Intro To Lotus Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

NOVEMBER 14

BMUG'S GUI FEST

UC Berkeley

BMUG's Graphical User Interface Exhibition is taking place, all day, at UC Berkeley's Pauley Ballroom. You will have an opportunity to see Apple's QuickTime CD and discuss the new software with Apple programmers. Over forty GUI vendors, including Claris, Lotus, and Hewlett Packard, will present their latest products. For information, call: (510)849-9114.

November 6 Technology And Empowerment: Careers In Latin America Workshops. San Francisco. BOSS-America. Call: (415)626-6702, ext. 2.

November 6–7 Fourth Annual Microprocessor Forum. San Francisco. Call: 1-800-549-4342.

November 7 Automated Accounting On The Macintosh Seminar. San Francisco. J.C. Lukrich & Co. Call: Beth Markus, (415)905-6900.

November 7 Intro To Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

November 7–8 Novell NetWare 386 Advanced Features Training Course. Alameda. SymPro University. Call: (510)865-0600.

November 8 Mission Critical Computing For The Small Business Enterprise Seminar. San Mateo. Metro Information Services. Call: Alex Lubarsky, (415)345-8591.

November 9 Computer Show & Sale. Oakland Coliseum. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

November 9 Intermediate WordPerfect Class. San Francisco. Pioneer Computer. Call: (415)543-4680.

November 9 Intro To LANs Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

November 9–10 LAN Users System Administration Level 1: Two Day Training. San Francisco. The Software Training Group. Call: (415)397-4158.

November 10 Computer Show. San Francisco. Ft. Mason Shows. Call: (916)725-0228.

November 10 Computer Show & Sale. San Rafael. MarketPro. Call: (415)388-8893.

November 10 Swapmeet—Apple II And Mac Computers. San Francisco. San Francisco Apple Core. Call: (415)771-5830.

November 7–10 Macintosh Consultants

Continued

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SUN. NOV. 17 - HAYWARD
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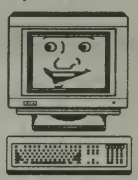

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MB 386-33MHz w/ 64K Cache	$398
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MB 486-25MHz w/ 8K Cache	$658
MB 486-25MHz w/ 64K Cache	$698
MB 486-33MHz w/ 64K Cache	$748
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MB TCI-plus 386sx20MHz	**$310**
MB TCI-plus 386-25MHz w/ 64K Cache	**$560**
MB TCI-plus 386-33MHz w/ 64K Cache	**$625**
MB TCI-plus 386-40MHz w/ 64K Cache	**$660**
MB TCI-plus 486sx 20MHz w/ 64K Cache	**$785**
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14" Club AT (1024x768) Non-Interlaced	$445
14" Seiko 1440 Interlaced	$475
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16" Nanao 9070U (60Hz Non-Interlaced)	$898
16" Nanao 9080I (72Hz Non-Interlaced)	$1068
17" ViewSonic 7 (72Hz Non-Interlaced)	$1145
20" Seiko 2050 (60Hz Non-Interlaced)	$1695
20" ViewSonic 8 (72Hz Non-Interlaced)	$1795
20" Nanao 9500 (72Hz Non-Interlaced)	$1895
20" NEC 5D	$1995
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Diamond Speed Star Plus w/ 1Mb	$145
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Pixel SVGA Hi-Color w/ 1Mb Turbo	$145
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Panasonic KXP 1124i	$288
Panasonic KXP 1624	$358
Panasonic KXP 4420	$745
Panasonic KXP 4450	$1135
Panasonic KXP 4455	$1845
Other	$Call

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Keyboard Focus 2001 plus	$50
Keyboard Focus 5001	$65
NorthGate 102 Keys	$75
NorthGate Ultra Keys	$95

INTERFACE CARDS

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DTC SCSI Controller	$125
DTC ESDI Controller	$135
Adaptec 1542 BK	$285
IDE Controller	$16
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IDE Everex Controller	$35
IDE DTK Controller	$49
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ACCESSORIES

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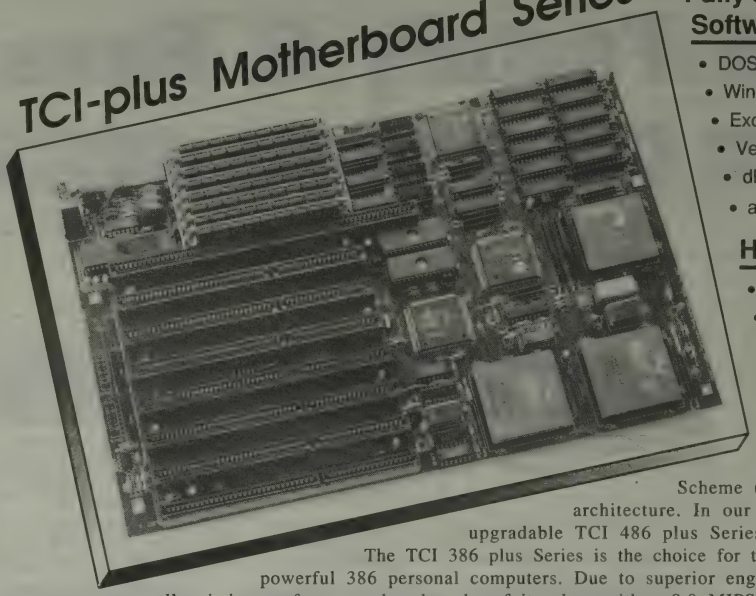

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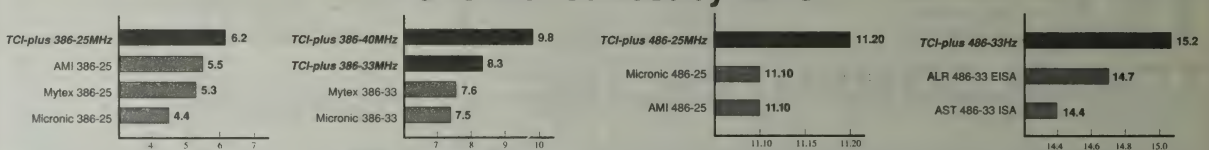

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November 11–13 18th Annual Computer Security Conference And National Exhibition. Miami. Computer Security Institute. Call: (415)905-2234.

November 11–13 Second Annual Multimedia Developers' Conference. San Francisco. MacroMind. Call: (415)442-0200.

November 13 Intro To Paradox Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

November 13 Merge Mailing In Russia: New Markets, Old Customs Workshops. San Francisco. BOSS-America. Call: (415)626-6702, ext. 2.

November 14 Automating Your Business Accounting System Seminar. San Francisco. J.C. Lukrich & Co. Call: Beth Markus, (415)905-6900.

November 14 Real Estate Management With Platinum Series Software Seminar. San Francisco. Howard M. Haberman Associates, Inc. Call: Howard M. Haberman, (415)641-0850.

November 15 Intro To Excel Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

November 15–17 CyberArts International Conference. Pasadena. Keyboard magazine. Call: (408)446-1105.

November 16 Computer Show & Sale. Cow Palace. Computer Swap. Call: 1-800-533-7220. BBS: 1-800-464-6408.

November 16 Macintosh Basic Class. San Francisco. Pioneer Computer. Call: (415)543-4680.

November 16 Regulatory And Legal Issues In The Telecom Industry Seminar. San Francisco. SFSU Extended Education. Call: (415)338-1373.

November 16 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

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November 17 Computer Show & Sale. Hayward. MarketPro. Call: (415)388-8893.

November 18 Aldus Persuasion For PC Class. San Francisco. Informative Edge. Call: (415)392-5544.

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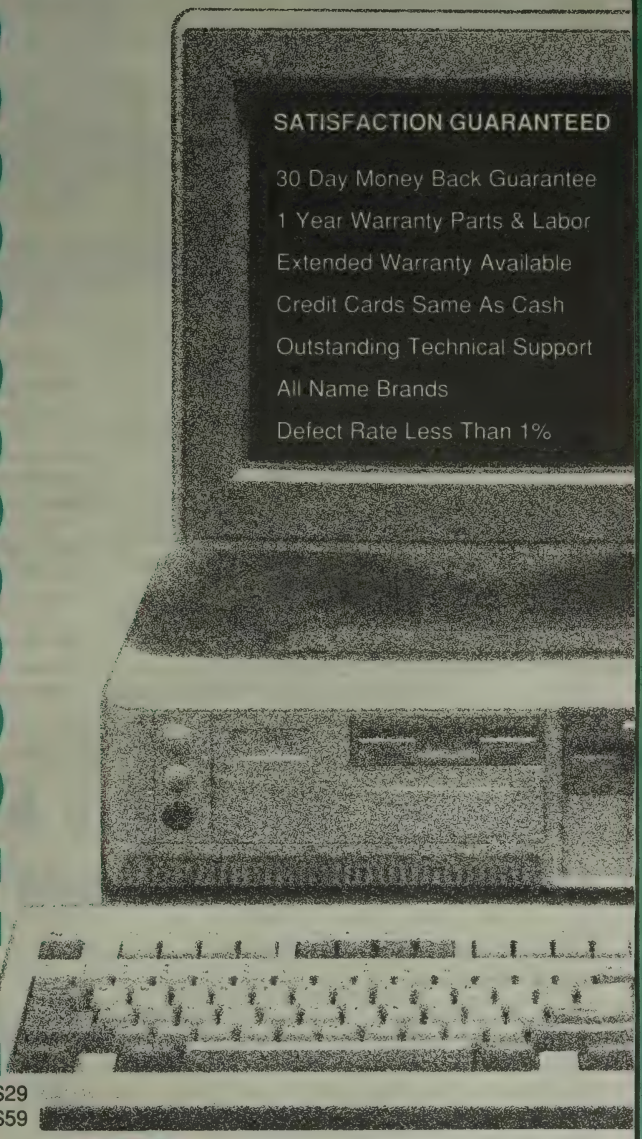

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November 21 WordPerfect For The Legal Profession Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

November 21–22 Q&A 4.0 Seminar: Database/Word Processing Software. San Francisco. Symantec Training Group. Call: (415)898-1919.

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November 22 Lotus 1-2-3 For Windows Hands-on Training. San Francisco. The Software Training Group. Call: (415)397-4158.

November 22 Windows As An Office Solution Seminar. San Francisco. Computown. Call: (415)394-8888, ext. 232.

November 23 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

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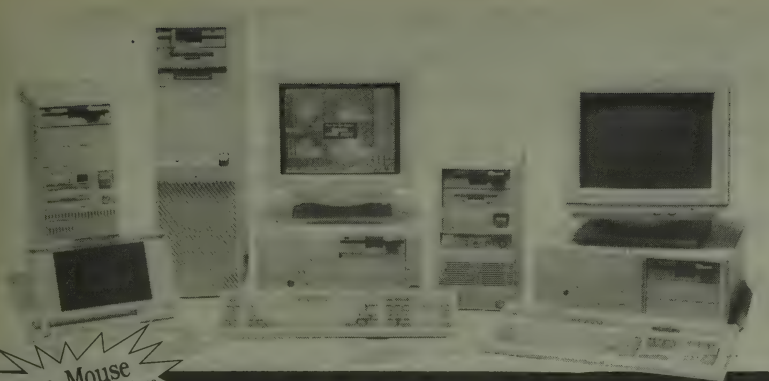

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Calendar Of Events continued

Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

November 25 Switching To Lotus 1-2-3 Hands-on Training. San Francisco. The Software Training Group. Call: (415)397-4158.

November 25 Training Classes On WordPerfect, Lotus, Quattro Pro, Paradox, And Windows. San Francisco. MicroAge. Call: (415)393-9600.

November 25–26 SQL—Basics Course. Alameda. SymPro University. Call: (510)865-0600.

November 26 Intermediate Lotus Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

November 26 Using Lotus 1-2-3 Training Seminar. San Francisco. SFSU Extended Education. Call: (415)338-1373.

November 30 Computer Show & Sale. Vallejo. MarketPro. Call: (415)388-8893.

November 30 Intermediate WordPerfect Seminar. San Francisco. SFPCUG. Call: (415)979-5879.

November 30 Intro To DBASE III+ Seminar. San Francisco. SFPCUG. Call: (415)979-5879.

November 30 Intro To Personal Computers Seminar. San Francisco. SFPCUG. Call: (415)979-5879.

November 30 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

DECEMBER

December 1 Computer Show & Sale. Oakland. MarketPro. Call: (415)388-8893.

December 3 Novell NetWare Operator Training Course. Alameda. SymPro University. Call: (510)865-0600.

December 3 & 10 Telecommunications Project Planning And Development Seminar. San Francisco. SFSU Extended Education. Call: (415)338-1373.

December 4 Novell NetWare Supervisor Training Course. Alameda. SymPro University. Call: (510)865-0600.

December 5 Automated Accounting Workshop. San Francisco. J.C. Lukrich & Co. Call: Beth Markus, (415)905-6900.

December 5 Intro To DOS Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

December 5 Novell NetWare System Manager Training Course. Alameda. SymPro University. Call: (510)865-0600.

December 6 Intro To Paradox Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

December 7 Intro To LANs Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

December 7 MacroMind MediaMaker Seminar. San Jose. Masters Institute. Call: (408)441-1800.

December 9 Excel Class. Walnut Creek. Computer Education Center. Call: (510)937-

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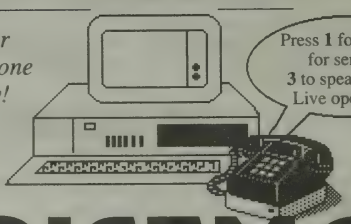

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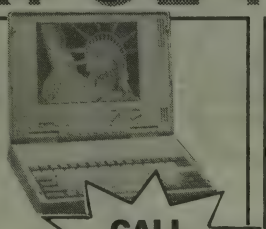

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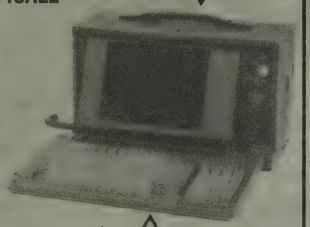

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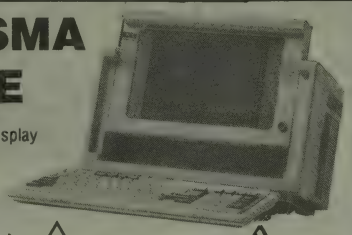

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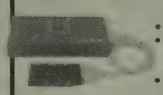

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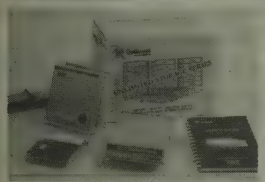

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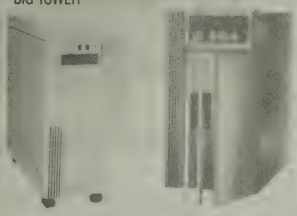

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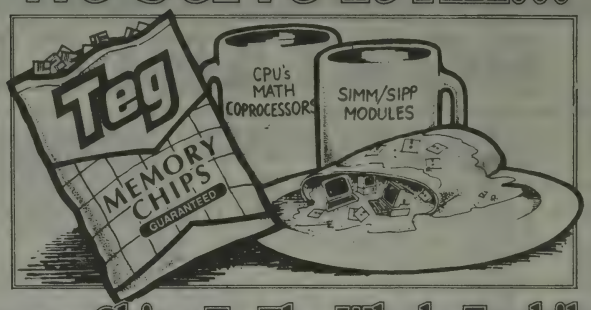

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RESOURCES

Calendar Of Events continued

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December 9 Novell SQL Database Server Seminar. Alameda. SymPro University. Call: (510)865-0600.

December 9–10 FrameMaker For Macintosh Class. San Francisco. Informative Edge. Call: (415)392-5544.

December 9–10 LAN Manager—System Admin Course. Alameda. SymPro University. Call: (510)865-0600.

December 9–11 Sun User Group Ninth Annual Conference & Exhibit. San Jose. Sun User Group. Call: (415)948-0998.

December 9–13 X Window System Training. Santa Clara. ICS. Call: (617)621-0060. Email: info@ics.com.

December 11 Lotus 1-2-3 Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

December 11–13 LAN Manager—Operations Course. Alameda. SymPro University. Call: (510)865-0600.

December 12 How To Successfully Automate Your Accounting System Seminar. San Francisco. J.C. Lukrich & Co. Call: Beth Markus, (415)905-6900.

December 12–13 Implementing Distributed Database Seminar. San Francisco. Digital Consulting. Call: (508)470-3880.

December 14 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

December 14 Voice And Data Integration Seminar. San Francisco. SFSU Extended Education. Call: (415)338-1373.

December 17–20 Windows 3.0—Support Engineer Course. Alameda. SymPro University. Call: (510)865-0600.

December 18 News On The Software Industry Presentation By Tim Bajarin. Palo Alto. SEF. Call: Barbara Cass. (415)854-7219.

December 18 Novell NetWare System Manager Training Course. Alameda. SymPro University. Call: (510)865-0600.

December 19 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (510)893-5753.

December 19 Excel For Windows Class. San Francisco. Informative Edge. Call: (415)392-5544.

December 19–20 Novell NetWare 386 Advanced Features Training Course. Alameda. SymPro University. Call: (510)865-0600.

December 29 Computer Show. San Francisco. Ft. Mason Shows. Call: (916)725-0228.

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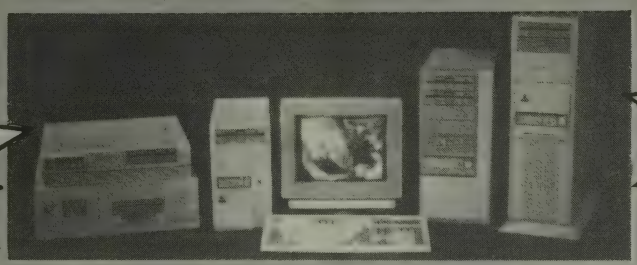

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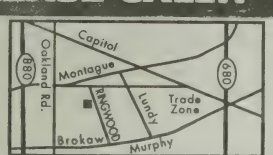

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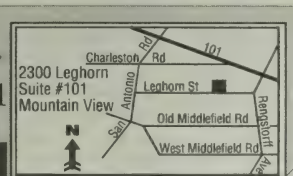

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The Black Data Processing Associates, Silicon Valley Chapter. Meetings: 4th Thurs., 6:30 pm, Amdahl Corp., Sunnyvale. Call: Doug Jones, (408)737-5999. [Exp. #93.]

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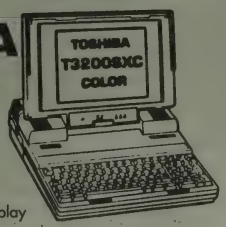

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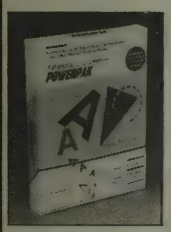

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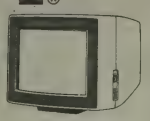

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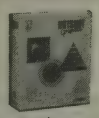

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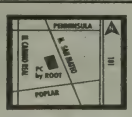

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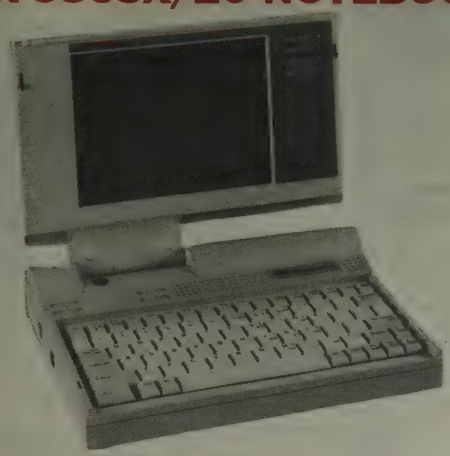

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AUM—Amiga Users Of Marin. Meetings: 3rd Wed., 7:30 pm, rm. 190, Science Center, College of Marin. Call: Bob, (415)924-5384. AUMBBS: (415)485-5895. [Exp. #91.]

AWEST Amiga Users. Meetings: 1st Wed., 7:00 pm, Computer Showcase, 2739 Geary, S.F. Call: (415)584-8406. [Exp. #91.]

FAUG—First Amiga User's Group. Meetings: 1st Tues., 7:00 pm, Palo Alto Hyatt. Call: Mike Fisher, (415)855-9426, BBS (415)595-2679. [Exp. #90.]

3rd Dimension—Image/Lightwave User Group. Meetings: 1st, 3rd & 5th Mon., Computer Showcase, 2739 Geary Blvd, SF. Call: Ollie, (415)863-8792. [Exp. #93.]

APL

APL Bay Area User Group. Meetings: 2nd Mon., 7:00 pm. Call: Tibor Horvath, (415)283-5611. [Exp. #90.]

APPLE

San Francisco Apple Core. Meetings: 3rd Tues., 7:00 pm, SF State University, Hensill Hall, Rm. 205. An Apple II user group. BBSes, newsletter, demos, mentoring, swaps, DTP and telecom sub groups. Call: (415)771-5830. [Exp. #88.]

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Apricot User Group, East Bay Chapter. New members welcome. Call: Ron, (415)828-9643. [Exp. #88.]

AT&T UNIX

AT&T Computer User Group-North Bay. Meetings: 1st Wed., new user education, 6:00 pm, program, 7:00 pm, San Francisco AT&T Bldg., 50 Fremont St. Call: Joe Mahoney, (415)584-6510; BBS (415)829-6027. [Exp. #90.]

AT&T Computer User Group-South Bay. Meetings: 3rd Wed., new user education, 6:00 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Joe Lipsig, (408)733-6522; BBS (408)946-7734. [Exp. #90.]

AT&T Computer Users Group, San Francisco. Meetings: 1st Wed., 7:00 pm, 50 Fremont St., 40th Fl. Call: (415)885-6631. [Exp. #91.]

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AT&T Computer Users Group, Sunnyvale—DOS Group. Meetings: 3rd Wed., 6:00 pm, 1090 E. Duane Ave., off Lawrence Expwy. Call: (415)885-6631. [Exp. #91.]

AT&T Computer Users Group, Sunnyvale—UNIX Group. Meetings: 4th Wed., 7:00 pm, 1090 E. Duane Ave., off Lawrence Expwy. Call: (415)885-6631. [Exp. #91.]

AT&T UNIX Computer User Group-South Bay. Meetings: 4th Wed., new user education, 6:30 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Thad Floryan, (408)985-7100; USENET, thad@cup.portal.com. [Exp. #90.]

ATARI

Bay Area Atari Users Group (BAAUG). Meetings: 1st Mon., 7:30 pm, Agnews Aud., 2nd fl., San Jose. Call: Joe Fischer, (408)988-3065. [Exp. #93.]

San Leandro Computer Club. Meetings: 1st Tues., 8:00 pm, San Leandro Public Library, 300 Estudillo Ave. 8/16/32-bit, SIGs. Call: Bob Wolley, (510)865-1672. [Exp. #93.]

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S.F. AutoCAD User Group. Meetings: 1st Mon. Call: Mark Williamson (415)383-4060. [Exp. #89.]

COMMODORE

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Commodore Hayward User Group. Meetings: 2nd Sat., 2:00 pm, Palma Ceia Park. (510)793-2514. [Exp. #93.]

Cupertino Chapter Of 64/More Commodore User Group. Meetings: 3rd Sun, 6:00 pm, Cupertino Library. Call: (408)262-9334. [Exp. #92]

CWEST Commodore 64/128. Meetings: 3rd. Wed., 7:00 pm, Fort Mason. For info: 1564 Waller #B, San Francisco, 94117. Call: (415)626-9946. BBS, (415)552-9320. [Exp. #92.]

North Valley Chapter of 64/More Commodore User Group. Meetings: 2nd Sat, 10:00 am. Milpitas Library. Call: (408)262-9334. [Exp. #92.]

CP/M

San Francisco Computer Society. Meetings: 7:00 pm, Laguna Honda School, 1350 7th Ave., San Francisco. Call: Ralph Gallegher, (415)929-0252. [Exp. #93.]

dBASE

East Bay Database User Group. Meetings: 3rd Sun., 1:30 pm, 2415 Grant St., Berkeley. Call: David Chilcott, (510)653-1303. [Exp. #92.]

Silicon Valley Computer Society X-Base Language Group/dBASE SIG. Meetings: 1st Tues., 7:00 pm, Birchwood Systems, 2001 Gateway PL, Suite 480 W., San Jose. Call: Fletcher Johnson (408)283-1333 (days & early evenings). [Exp. #90.]

Silicon Valley Computer Society X-Base Language Group/FoxPro SIG. Meetings: 2nd Thurs. 7:00 pm, Birchwood Systems, 2001 Gateway PL, Suite 480 W., San Jose. Call: Fletcher Johnson (408)283-1333 (days & early evenings). [Exp. #90.]

DESKTOP PUBLISHING

Bay Area Desktop Publishing User Group. Meetings: 1st Tues., 7:00 pm, 2493 Telegraph Ave., Berkeley. Computer-based tutorials on PageMaker 4.0. Speaker: Dr. C.J. Wallia. Call: (510)548-7712. [Exp. #91.]

EPSON

Bay Area Epson Salts. Meetings: 2nd Tues., 7:30 pm, 2611 Broadway, Redwood City. Call: Joe, (415)364-9232, or Tom, (415)992-5475. [Exp. #88.]

FORTH

Forth Interest Group of North Bay. Meetings: 2nd Sat., 1–5 pm, 2055 Center St., Berkeley. Tutorial at noon. Call: Leonard Morgenstern, (415)376-5241. [Exp. #88.]

Sacramento FORTH Interest Group. Meetings: 4th Wed., 7:00 pm, SMUD. 1708 59th St., rm. A. Call: Bob Nash, (916)487-2044. [Exp. #91.]

FREEDOM, PRIVACY, AND TECHNOLOGY

BMUG SIG on Freedom, Privacy, and Technology. Meetings: Last Sun., 2:00 pm, BMUG office, 2055 Center St., Berkeley. Call: Judi Clark, (510)549-2684. [Exp. #92.]

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Napa Valley PC User Group. Meetings: 2nd Wed., 7:30 pm, 10 Chapel Hill Dr., Napa. Call: Lee Schwab. [Exp. #92.]

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Peninsula Computer Club. Meetings: 2nd Thurs., 7:30 pm, Social Room, 222 Laurel St., San Carlos. DOS and CP/M libraries. Call: Larry Welling, (415)593-3391. BBS (415)571-9259. [Exp. #91.]

Pro Players. Club for all games and utilities users. Write: PO Box 84144, Hung Hom Bay Post Office, Hong Kong. [Exp. #92.]

San Francisco Business Computers. Meetings: 4th Thurs., 5:30 pm. For those who use computers in business. Visitors $5. Call: Jordan Rosenberg, (415)788-5338. [Exp. #91.]

San Francisco Computer Society. Meetings: 1st Mon., 7:00 pm, Laguna Honda School, 1350 7th Ave., San Francisco. Call: Ralph Gallegher, (415)929-0252. [Exp. #93.]

KNOWLEDGE-MAN

Bay Area KnowledgeMan (and Guru) User Group. Meetings: 1st Tues, 6:30 pm., JNZ, Inc., 826 Las Trampas Rd., Lafayette. A forum for discussion and info concerning mdbs products, esp. KnowledgeMan and Guru. Call: (415)947-4878. [Exp. #89.]

MACINTOSH

International Macintosh User Group. Meetings: 3rd Thurs., 7:00 pm, Apple Computer, 10500 N. De Anza Blvd., Cupertino. Mission: Act as a forum for people interested in using Macintosh computers in different languages. Call: Schiko Berry, (408)826-7724, weekdays. [Exp. #93.]

SPC Apple User Group. Meetings: 2nd Wed., 7:30 pm, Fremont Main Public Library. The Society for Prevention of Cruelty to Apple Computers User Group supports all Apple and Macintosh computers. Call: Jim Weil, (415)796-7169. [Exp. #88.]

Women's Macintosh User Group. Meetings: 2nd Tues., 7:00 pm, ComputerWare, Palo Alto. Call: Buffy Joseph, (415)792-2840 or Tayna Halepota, (415)949-3936. [Exp. #88.]

MULTIMEDIA

International Interactive Communications Society—IICS. Meetings: 2nd Wed., 7:30 pm, Call: IICS Hotline, (415)328-7318. [Exp. #92.]

MUSIC

Computer Music SIG. MIDI and beyond. All computer types welcome. Call: Bob Brander, (415)592-6993. [Exp. #89.]

NETWORKING

NetSIG. Meetings: 4th Tues., 7:00 pm, Novell Sunnyvale. Networking SIG for Software Developers. SEF group. Call: Skip Addison, (408)747-4356. [Exp. #90.]

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Neural Networks SIG. SIG for Neural Networks and its applications. Call: Kumar, (408)946-5835. [Exp. #90.]

NEXT

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The East Bay Novell Users Group. Call: George M. Gold, (415)444-4899. [Exp. #88.]

Sacramento NetWare User Group. Call: Charles Raley, (916)752-9561. [Exp. #89.]

Silicon Valley Novell User Group. Meetings: 3rd Wed., 6:30 pm, Coco's, 1305 S. Mary Ave., Sunnyvale. Call: Bill Strouse, (408)453-3321. BBA (408)453-3326. [Exp. #88.]

The San Francisco Novell Users Group. Call: Thomas Thibault, (415)944-9500. [Exp. #88.]

PARADOX

Bay Area Paradox User Group—BAPALS. Meetings: 4th Tues.. 4:00 pm, SF State University Downtown Campus. Forum for users and developers of all levels. Call: Robert Smiley, (415)957-4656. [Exp. #93.]

PROGRAMMING LANGUAGES

Silicon Valley Computer Society C Programming SIG. Meetings: 3rd Mon., 7:00 pm, Doubletree Hotel, 5101 Great America Pkwy., Santa Clara. Discuss C related issues and occasional speakers. Call: Fletcher Johnson, (408)283-1333 (days & early evenings). [Exp. #90.]

RACES

California Races Group. Meetings: Tues., 7:00 pm, 1491 River Park Dr., Sacramento. Technical discussions on computerized emergency communications. Call: Jim West, (916)991-5505. [Exp. #88.]

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East Bay R:Base Users Group. Meetings: 2nd Tues. Call: Longwell Assoc., (510)451-5316. [Exp. #92.]

SQL

SQL_Forum/Bay Area SQL Database Server User Group. Meetings: Once a month in downtown SF. Oracle, SQL Server, SQLBase, and more. Call: Robert Gentry, DBBS, Inc. (415)583-3000. [Exp. #90.]

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Santa Clara Valley TIPC Group. Meetings: 4th Thurs., 7:00 pm, Magnolia Inn, 176 S. Bernardo, Sunnyvale. Newsletter. library. Call: Thor, (415)386-5237. [Exp. #93.]

UNIX/XENIX

UNIX SIG. Meetings: 2nd Tues., Oracle Corp. Fitness Center, Redwood Shores. Sponsored by Software Entrepreneurs Forum. Call: Priscilla Rowe, (415)776-0513. [Exp. #91.]

UNIX/XENIX User Group of N. CA. Write: Just Computers, PO Box 355, Cotati, CA 94931. Attn: User Group. Call: BBS, (707)792-0420. [Exp. #90.]

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Continued from page 19

not do well in, often stranding current customers, and this could happen in the networking market as well.

However, Intel could easily be a long-term player, acting like Novell and buying small companies with good niche products for Intel to sell. Although Intel's entry has a broader scope than most initial announcements, it did not offer too many products, and can probably maintain a good presence in the market long enough to sustain growth.

DR DOS V6

When Microsoft released MS-DOS v5 earlier this year, many people noted that it didn't even have all the features of Digital Research's DR DOS v5. However, Microsoft is Microsoft, and commands the vast majority of the PC operating system market.

Digital Research wasn't content to watch Microsoft play the feature game and last month released v6 of its MS-DOS-compatible operating system. Although the new features are excellent, many PC users will still wonder why they would want to buy anything other than a true Microsoft product. The answers are the same as for the question of buying a non-Intel CPU: faster, cheaper, and more features.

DR DOS v6 acts just like MS-DOS, except that it has many more features, and many of the features that it shares with MS-DOS are better implemented. The features not found in MS-DOS include a disk optimizer (to speed up access on large files), file compression (to put more files on a disk), and much faster disk caching. All of these features are available for MS-DOS, but they are not free and usually have interfaces that don't look like the rest of MS-DOS. By bundling them with DR DOS, Digital Research hopes to interest companies who want a single vendor for all of their basic operating system needs. Digital Research is redefining what should or should not be part of a PC operating system along the lines of larger systems such as UNIX.

Since Digital Research has such a small portion of the operating system market, a new version such as this would normally not be very important. However, since DR DOS is MS-DOS's only notable competition, features that are added to DR DOS may eventually show up in MS-DOS or other Microsoft operating systems.

Also, now that Novell is buying Digital Research, DR DOS's market may vastly increase if Novell decides to give away or heavily discount the software. Future versions of DR DOS will have NetWare-specific code and may in fact be bundled with NetWare. ■

Given that networking seems to be the most trouble-ridden area for corporate PC users, Intel's more complete solution could compete well with the offerings from vendors such as Novell and Banyan.

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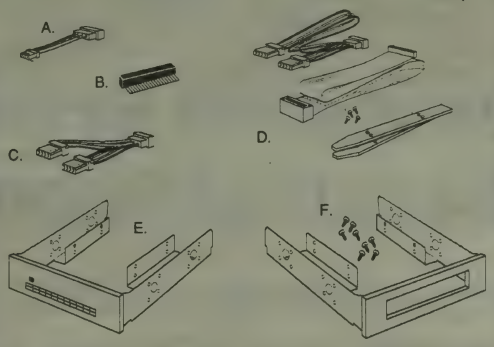

Fig.	Description	HSC#	Price
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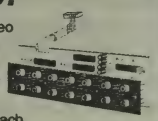
B	3.5" Floppy Pins-to-Edge Data Cable Adaptor	ADT21080	2.49
C	Floppy or Hard Disk Power "Y" Cable (4")	FDDY	1.95
D	Cable & Rail Kit for 2nd Hard Disk Drive contains: Rails for AT Chassis, 4 screws, 20-pin Data Cable (21"), Power "Y" Cable with 14" long branch	12692	3.95
E	3.5" to 5.25" Hard Disk Drive Bracket, Used	12693	4.95
E	3.5" to 5.25" Hard Disk Drive Bracket, New	HDK325S	9.95
F	3.5" to 5.25" Floppy Drive Kit (incl. A & B above)	FDK325	9.95

Return of the Amazing Hobbyist Project Boards!

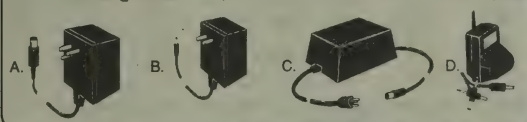
You may remember these items from over a year ago...well, we found a few more! The board at left is a MTS Stereo decoder board from a television accessory device. We provide a pinout diagram for the connectors, but the rest is up to you! The item shown at left is a digital audio switch from the same television accessory unit. It will divert audio signals from five different (stereo!) inputs to two different sets of output jacks. We provide a schematic and truth-table for the TTL inputs to control direction of the output. Your choice of project board, $9.95 each while they last!



$9.95 each

AC Adaptors

Fig.	Output	Plug	HSC#	Price
A	5VDC @ 500mA, ±12VDC @ 130mA	5p. DIN	12634	$4.95
C	5VDC @ 1A, ±12VDC @ 250mA	5p. DIN	12245	$14.95
A	5.8VDC @ 125mA Special!	2-pin	0286	$1.25
B	9VDC @ 225mA	2.5mm	8735	$2.95
B	9VDC @ 500mA	3mm Coax	10853	$3.95
A	12VDC @ 500mA	3p. DIN	6814	$4.95
A	14VDC @ 200mA	None	7976	$2.95
D	Selectable Output & Polarity, 110/220 3,4.5,6,7.5,9,12VDC @ 300mA	Multiple	12406	$3.95
B	17VAC C.T. @ 750mA	None	12424	$3.95
B	24VAC @ 825mA	3mm Coax	12586	$3.95



dbx Noise Reduction Unit for your personal stereo

Uses two AAA batteries (not included). For dbx (or type "B" Dolby) encoded tapes. Features separate volume controls. Measures 4 3/8" x 1 1/4" x 1 3/16", with belt clip. Reduces annoying tape hiss, increases enjoyment!

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Cable Madness!

HSC# 10816	HPIB Cable, .5 Meter	$25.00
HSC# 12381	BNC Cable, 6 foot, RG58 (Pomona)	$ 7.95
HSC# 12363	AC 3-Wire extension, 15 ft. 16-3 (black)	$ 5.95
HSC# 12362	AC 3-Wire extension, 25 ft. 14-3 (orange)	$ 7.95
HSC# 12029	SCSI Interconnect, 18 inch; 50p. to 50p.	$ 7.95

Ramsey Kits for the DIY'er...

HSC is proud to feature Ramsey Electronics Kits for the electronics hobbyist and "do-it-yourself" crowd...and they make more than just LED blinkers and sound-effects generators! Look at some of these exciting Amateur Radio projects! Send a SASE for complet list of kits available at HSC!

AR-1 **Aircraft Receiver kit:** Listen to airlines, corporate and private pilots, control towers, approach and departure radar control and many other FAA services. Sensitive, smooth varactor tuning, speaker audio output. Detailed instruction manual makes assembly a snap! $24.95, Case and knob kit $12.95

QRP-20, 30, 40, or 80 **Ham Transmitter kits for 20, 30, 40 or 80 Meters:** One-watt crystal controlled rigs with front panel switch for choosing between two VXO-controlled crystals, giving frequency range of up to 20 KHz. Pi-network antenna coupling to diode protected receiver T-R antenna jack. VSWR protection, VCO frequency tuning, 12 - 14 VDC operation. Each kit, $29.95 Case and knob kit, $12.95

HR-20, 30, 40, or 80 **Ham Receiver kits for 20, 30, 40 or 80 Meters:** Companion receivers to above transmitters. Better than 2 uV sensitivity, front panel RF Gain control, Audio Gain control, smooth varactor tuning, no toroids to wind! Uses popular NE602 IC and LM386 for audio output stage. Runs off a regular 9 V battery (not included). Each kit, $27.95 Case and knob kit, $12.95

FTR-146 **2-Meter Synthesized Transceiver kit:** No crystals needed! True frequency synthesis for 144 - 148 MHz. Front panel selection of favorite frequency pairs, and you can set up more if needed. 5 Watts RF Output. Accepts ICOM or equivalent speaker/mics. $129.95, Case and knob kit $24.95

FR-146 or FR-220 **2 Meter or 1.25 Meter (220MHz) Ham Receiver kit:** Either one is a lot of receiver for the money! Dual conversion FM receivers designed around a sophisticated receiver-on-a-chip feature a microwave transistor RF amp., NE602 Mixer, Ceramic IF filters (10.7MHz & 455KHz), smooth, stable varactor tuning. Uses 9V battery (not included). $29.95 each, Case and knob kit $12.95

FM-10 **FM Stereo Transmitter kit:** That's right, STEREO! Supply a music source to the line-level inputs, find a clear frequency and you are on the air with a school, home, camp or neighborhood FM station, operating per revised FCC Part 15 Rules. Easy assembly and operating instructions with FCC rules information. Tunes 88 - 108 MHz, very stable RF output, operates off one 9V battery (not included). Adjustable stereo balance and subcarrier, great stereo separation. $29.95, Case and knob kit $12.95

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Investors Brace For Third-Quarter Earnings Reports

Computer stocks posted mixed marks last month, as investors and traders alike braced themselves for upcoming third-quarter earnings report cards. For the month, the MicroTimes Stock Index took a breather from the meteoric rise of the past three months and finished down 39.67 points, or 1.2%, to close at 3216.77.

Nationally, the Dow Jones Industrial Average traded all month in a constricted range, as traders pushed the index of thirty blue-chip stocks to and fro. When trading came to a close, and the "buy" and "sell" orders were swept from the floor, the Dow Industrials had ended the monthly trading stanza down 44 points at 3006.04.

Computer stock prices were volatile across the board last month, as investors responded without hesitation to any clue provided concerning the direction of earnings. Take Borland International, for example, as its shares were down sharply last month after the company announced that it could take a charge of as much as $80 million to cover the costs of acquiring Ashton-Tate. Borland's stockholders approved the pending acquisition of Ashton-Tate last month. For the month, Borland's stock lost $8.50, or 15.7%, to close at $45.75; shares of Ashton-Tate were down $1.38, or 8.4%, to close at $15.00.

CPU maker Intel also saw its stock suffer from concerns over its earnings. During the month, the company said it believed Wall Street expectations for Intel's third-quarter earnings were too high in the face of today's soft computer market. Wall Street responded by selling off the company's stock to the tune of $9.00 a share, or 17.6%, en route to a close of $42.25.

Oracle Systems last month provided an example of the effects of a positive earnings report on stock prices. During the period, the company reported that earnings per share for the recently completed first quarter were $0.02, a net increase of $0.24 from the loss of $0.22 a share for the same time period a year ago. Response on Wall Street was positive as well, as the company's shares were bid up 20%, or $2.25, to a closing price of $13.50.

EXCH	COMPANY		TICKER SYMBOL	CLOSING PRICE 08/29/91	CLOSING PRICE 09/27/91	NET CHANGE IN PERIOD	PERCENT CHANGE IN PERIOD	PRICE/ EARNINGS RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	52 WEEK HIGH	52 WEEK LOW
	SOFTWARE											
OTC	Adobe		ADBE	51.00	50.25	-0.75	-1.47	23	0.32	0.64	63.00	17.00
OTC	Aldus		ALDC	38.25	40.00	1.75	4.58	22	0.00	0.00	59.88	21.00
OTC	Ashton-Tate		TATE	16.38	15.00	-1.38	-8.40	300	0.00	0.00	16.63	5.13
OTC	Autodesk		ACAD	47.75	50.25	2.50	5.24	21	0.48	0.96	62.25	32.00
OTC	Borland		BORL	54.25	45.75	-8.50	-15.67	22	0.00	0.00	64.25	16.50
OTC	Informix	(H)	IFMX	6.25	7.88	1.63	26.00		0.00	0.00	8.38	2.63
OTC	Lotus	(H)	LOTS	39.75	32.00	-7.75	-19.50		0.00	0.00	40.75	12.50
OTC	Microsoft	(H)	MSFT	85.75	88.25	2.50	2.92	36	0.00	0.00	90.00	35.75
OTC	Novell		NOVL	33.63	37.50	3.88	11.52	38	0.00	0.00	39.63	8.63
OTC	Oracle	(H)	ORCL	11.25	13.50	2.25	20.00	96	0.00	0.00	14.13	4.88
OTC	Software Publishing		SPCO	19.75	17.88	-1.88	-9.49	21	0.00	0.00	35.25	12.00
OTC	Symantec	(H)	SYMC	58.50	65.75	7.25	12.39	63	0.00	0.00	67.75	17.75
	HARDWARE											
OTC	Apple		AAPL	53.00	49.00	-4.00	-7.55	18	0.48	0.98	73.25	24.25
OTC	AST Research		ASTA	29.50	29.38	-0.13	-0.42	14	0.00	0.00	32.75	7.50
NYS	Commodore		CBU	11.00	12.50	1.50	13.64	7	0.00	0.00	21.63	4.50
NYS	Compaq		CPQ	35.75	34.50	-1.25	-3.50	8	0.00	0.00	74.25	29.88
NYS	Digital Equipment		DEC	63.63	56.50	-7.13	-11.20		0.00	0.00	83.00	45.50
OTC	Dell	(H)	DELL	33.63	32.00	-1.63	-4.83	19	0.00	0.00	36.25	8.25
NYS	Hewlett-Packard		HWP	53.75	49.00	-4.75	-8.84	15	0.48	0.98	56.63	24.88
NYS	IBM		IBM	95.50	102.25	6.75	7.07	14	4.84	4.73	139.75	94.00
NYS	Silicon Graphics		SGI	41.13	42.75	1.63	3.95	30	0.00	0.00	47.25	18.00
OTC	Sun Microsystems		SUNW	33.25	30.00	-3.25	-9.77	16	0.00	0.00	38.63	15.00
NYS	Xerox	(H)	XRX	58.25	61.00	2.75	4.72	11	3.00	4.92	62.13	29.00
NYS	Tandy		TAN	28.50	27.63	-0.88	-3.07	11	0.60	2.17	36.50	23.38
	CPUs											
NYS	Advanced Micro Device		AMD	12.13	9.63	-2.50	-20.62		0.00	0.00	14.25	3.63
OTC	Intel		INTC	51.25	42.25	-9.00	-17.56	11	0.00	0.00	59.25	28.00
NYS	LSI Logic		LSI	7.25	7.00	-0.25	-3.45		0.00	0.00	12.50	5.25
OTC	MIPS		MIPS	11.13	12.13	1.00	8.99		0.00	0.00	20.88	7.25
NYS	Motorola		MOT	68.25	60.50	-7.75	-11.36	18	0.76	1.26	71.25	45.75
	COMMUNICATIONS											
NYS	AT&T		T	38.63	37.50	-1.13	-2.91	14	1.32	3.52	40.38	29.00
NYS	BellSouth Corp.		BLS	48.75	49.50	0.75	1.54	16	2.76	5.58	56.25	46.13
OTC	MCI		MCIC	29.00	29.13	0.13	0.43	38	0.10	0.34	34.63	17.88
NYS	Northern Telecom	(H)	NT	40.25	39.38	-0.88	-2.17	21	0.32	0.81	41.00	22.63
NYS	Pacific Telesis		PAC	43.00	41.88	-1.13	-2.62	16	2.12	5.06	47.50	38.50

KEY: NYS=NEW YORK • ASE=AMERICAN • OTC=OVER THE COUNTER • (H)=NEW HIGH REACHED IN PERIOD • (L)=NEW LOW REACHED IN PERIOD • (s)=STOCK SPLIT

MARKET DIARY:

MOST ACTIVE ISSUES:

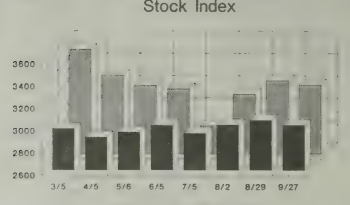
ADVANCES	14	LARGEST DOLLAR GAINER	Symantec $7.25
DECLINES	20	SMALLEST DOLLAR GAINER	Intel $-9.00
UNCHANGED	0		
NEW HIGHS	8	LARGEST PERCENTAGE GAINER	Informix 26.00%
NEW LOWS	0	SMALLEST PERCENTAGE GAINER	Advanced Micro Devices -20.62%

CLOSING QUOTES FOR CHART:

	CLOSE 08/29/91	CLOSE 09/27/91	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH
MICROTIMES STOCK INDEX	3256.43	3216.77	-39.67	-1.22
DOW JONES INDUSTRIAL AVERAGE	3049.64	3006.04	-43.60	-1.43
STANDARD & POOR'S 500 STOCK INDEX	396.47	385.90	-10.57	-2.67
N.Y.S.E. COMPOSITE	217.12	212.21	-4.91	-2.26
NASDAQ COMPOSITE	526.39	524.48	-1.91	-0.36

DATE	MICRO TIMES	DOW JONES
03/05/91	3531.96	2972.52
04/05/91	3298.59	2896.78
05/06/91	3209.84	2941.64
06/05/91	3178.90	3005.37
07/05/91	2850.09	2932.47
08/02/91	3132.83	3006.26
08/29/91	3265.70	3049.64
09/27/91	3216.77	3006.04

MICROTIMES
Stock Index



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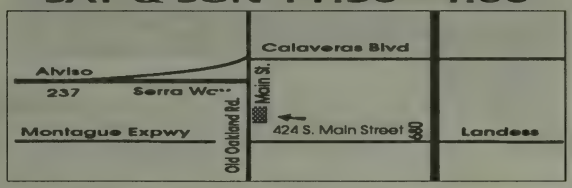

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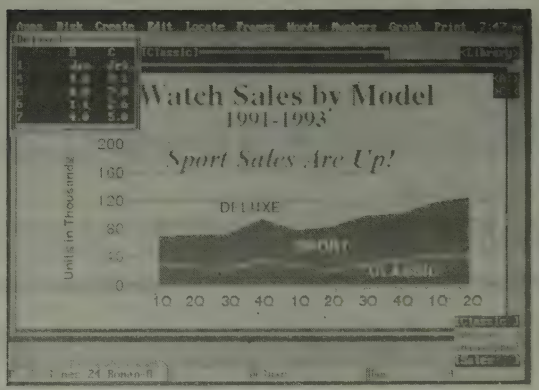

First shipped in 1984, Framework was one of the first successful attempts to integrate the most important software functions—word processing, spreadsheets, databases, outlines, and telecommunications.

Continued from page 36

Outlines can be used for organizing systems of frames together, or just as a conventional outline. I use it in the former mode to organize documents, spreadsheets, brainstorming work, and other activities for the projects I manage. I use the latter mode for fast brainstorming, making and sorting complex lists of ideas, and for telephone diaries and the like.

FRED

Framework's programming language, FRED, is powerful and easy to learn. Beyond the wide range of standard functions provided, FRED is highly expandable and flexible through user-defined functions. Improvements in Framework IV include more than forty new FRED commands, most based on requests by customers of earlier versions of Framework.

TOOLS AND MORE TOOLS

Framework comes with powerful disk management tools, removing the need for most extra memory-resident software. Disk drives are "cabinets" on the desktop, which can be accessed and their files manipulated working the same way I work on the Framework desktop.

One especially nice feature that still doesn't exist in DOS is Framework's ability to move files anywhere on a disk; simply place the cursor on a file, press a single key, move the cursor to the new location for the file (in any subdirectory), press Return, and the work's done.

Framework IV provides built-in support for importing and exporting dBASE, IBM DCA/Displaywrite, WordStar, Multimate, WordPerfect, Lotus 1-2-3, Multiplan SYLK, Visicalc DIF, and Microsoft Word files. One of the improvements in Framework IV's graphics element is the ability to import and export graphics files in CGM format. "Hooks" are also provided to write additional import/export programs (in FRED).

Framework provides direct access to DOS, and I've written a number of simple FRED programs to take advantage of this feature. For instance, when I read conferences on The WELL, I have Framework's telecomm element set up to copy all text automatically to a file on my hard disk in case I want to go back off-line to anything I've just read or posted. To erase that temporary file after I've finished with it, I have a simple FRED macro that accesses DOS and runs a short batch program to delete the temporary file.

That last example gets to the heart of why I really like and depend on Framework. Rather than having to learn a lot of different software packages and adjust my working style to each one, I "tune" Framework to work for me. I use it for nearly all general work I do, with a few more specialized programs around for doing elaborate statistical analyses and the like.

ROOM FOR IMPROVEMENT

Framework does have a few problems, though.

From my point of view, it was never clearly positioned in the marketplace by Ashton-Tate; even today, caught up in the turmoil related to its merger with Borland, Ashton-Tate hasn't been doing much to advertise the new release.

Over the years, Framework has turned out to be the favorite product of a lot of individuals, professionals, and small companies. You're most likely to see it running on the PC of the power user next door, in legal firms, in small businesses, and in a number of government agencies. Ashton-Tate's dBASE found a home in many large companies as their primary database software for PCs; Framework spread out all over the place.

One place it especially spread to was Western and Eastern Europe, where there are very successful versions of Framework for the United Kingdom, France, Germany, Czechoslovakia, Hungary, and the Soviet Union; indeed, Framework has been more successful internationally than in the United States.

Technologically speaking, Framework has some weaknesses. Two of its main features—its database and its graphics—are significantly less powerful than standalone or new Windows products. Framework IV, as noted above, resolves the database weakness by providing access to .dbf files. Graphics are also much improved in the new version, but don't stand up to other products.

Framework is still not a GUI, which, with the success of Windows and similar programs, is clearly a wave of the future. On the other hand, Framework IV will run quite well on an XT- or AT-level machine, a distinct advantage for customers who don't want to keep changing hardware to keep up with the latest software.

FRAMEWORK'S FUTURE

Ashton-Tate provides various support plans for Framework, including a "forum" on CompuServe. Currently there are two different exchanges going on there. One is strong applause for Framework IV from long-time Framework users. The other is concern about Framework's future under Borland. Framework may have always been ahead of its time, but users are worried that it will not fit into Borland's plans for its future product portfolio.

I have no idea what Borland's strategic planners have in mind, but it would be most unfortunate if Framework were allowed to languish or, worse, fade away. Nothing remotely compares with Framework as a complete, standalone personal information management system. Competition from the Windows approach to the world notwithstanding, Framework remains well ahead of the competition in terms of integration, ease of use, and overall power in relation to value.

And in an era where most software is just getting around to meeting the promises of personalization and customization for individual users, Framework has provided just that capability for many years.

Even if there are no more versions of Framework, I see no reasons why Framework IV will not be my primary personal software for many years to come.

The list price of the single-user version of Framework IV is $695, but the street price is usually about $250 lower. Single-user upgrades cost a very reasonable $99 from Ashton-Tate. (LAN versions of Framework IV are available from $295, for a one-user Network Access Pack, to $995, for five users; LAN upgrades are priced by Ashton-Tate at $300.) ■

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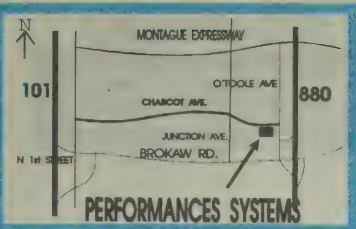

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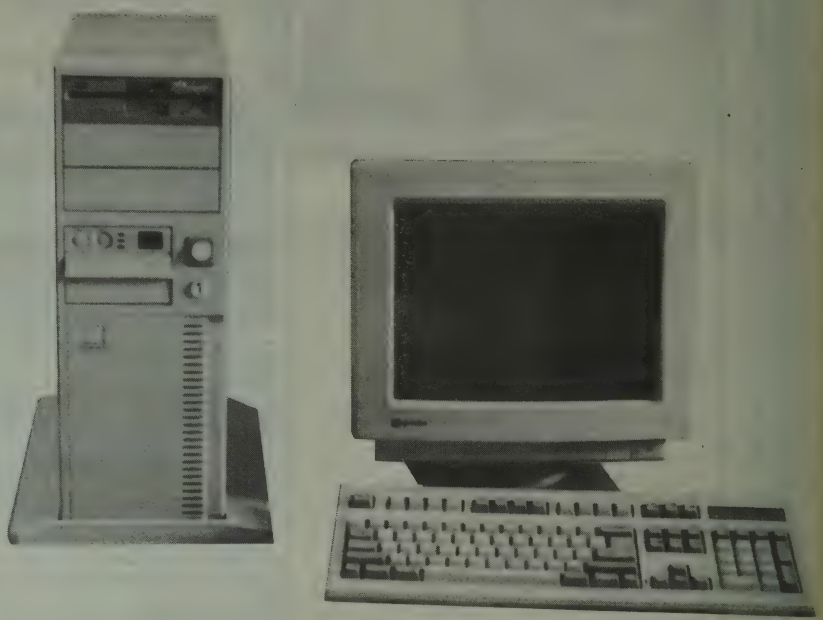

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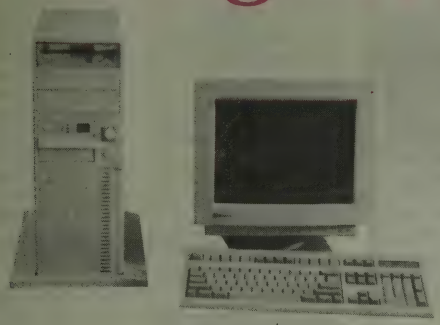

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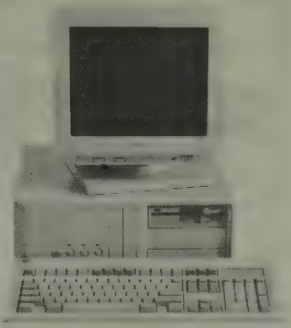

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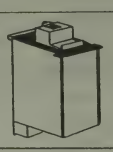

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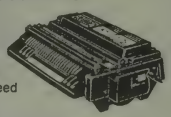

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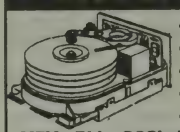

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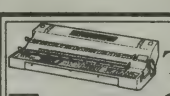

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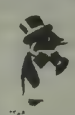

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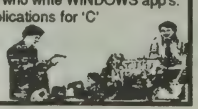

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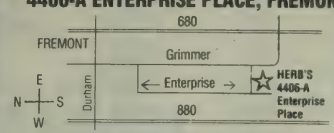

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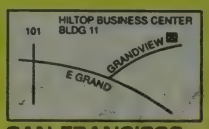

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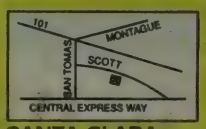

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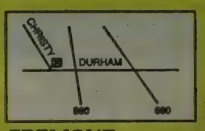

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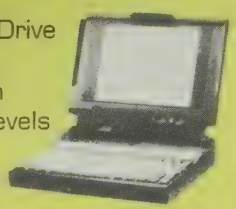

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Continued from page 68

only connect me to one data server at a time, and it's not particularly versatile in output handling.

"I think I could write a program to remedy all these deficiencies, but yesterday it occurred to me that I didn't have to, I could get everything I wanted by using vi as an interface to the SQL interpreter."

"Wait a minute. You're using vi as a front end to a query language interpreter?"

"The more I thought about it, the more I realized that most of what I do really is editing. So now I'm trying to figure out how I can use vi as a general purpose interface to the shell."

"Yep. I start vi and type in the SQL statements I want run, just as I would for the SQL interpreter. When the query is ready I move the cursor to the first line of the query and type

```
!}qli
```

The '!' invokes the shell escape, the '}' says apply this command to the following text up to a blank line, and 'qli' is the name of the program I want run. The output of the query comes back into vi, and I can edit it or print it or undo it and revise the query. If I want to save the text of the query, qli has a command line argument to echo queries before it returns the results. It's great.

"The more I thought about it, the more I realized that most of what I do really *is* editing. So now I'm trying to figure out how I can use vi as a general purpose interface to the shell. The main practical problem is remembering to compose *all* the input the program will need before you execute the shell escape. If the program you run needs an explicit command to quit, you have to include it or everything just hangs. Once you've mastered that, it's just about ideal."

BUT...BUT...

"Nosebest, this all sounds awfully inconvenient. Each shell escape runs in an independent shell. If you wanted to do a number of things in another directory, you'd have to include a 'cd' command in each batch to change to that directory."

"True, but you'd at least have the 'cd' command in the editor, so it wouldn't be that much work to include it."

"Heck with the inconvenience, doesn't it drive you nuts to have to type all the !s and }s and Gs and the like?"

"Exactly!" Nosebest was immensely gratified at his audience's grasp of this truth. "And really there are two problems. One is just the number of characters that must be typed to execute a command. The more you have to type, the more likely you are to make mistakes, so there's some incentive to reduce the number of keystrokes. There are lots of ways to do this: You can use shell aliases if your shell supports them, or put a complicated sequence of commands in a shell script.

"The other problem is that just typing '!}qli' doesn't give you a second chance if you make a mistake. I mean what's the point of working in an editor if there are commands you can't edit?"

"You're losing me again."

"Well, the whole point of this is to make *everything* editable, to minimize the number of commands that can't be modified or saved and reused. The key to this business of using a text editor as a general purpose interface is the ability to execute part of the file that's being edited."

"Okay, if you say so."

"The amazing thing is that vi can do that! When you work in vi, there are twenty-six temporary buffers that are available for text storage. The buffers have single-letter names and there are 'yank' and 'put' commands to move things back and forth between the main editing buffer and these auxiliary buffers. For example, the command

```
"aY}
```

yanks the next block of text up to an empty line into buffer 'a.'

"Now, these buffers can hold arbitrarily large blocks of text, and it's very helpful to have these buffers around when you're editing. However, vi has an 'instant macro' feature that allows the contents of a buffer to be executed in cursor mode. Commands like '!}fmt' can be typed into the file you're editing, yanked into a buffer, and then executed by typing '@' and the buffer name.

"I've been playing around with this and you can perform either kind of shell escape with this sort of macro!"

Nosebest swivelled back to face his terminal.

Furtive looks and hand signals were being exchanged among the visitors. They were trying to decide who would get the net.

"What about the numbers, Nosebest?"

Over his shoulder Nosebest called, "You can have the numbers by noon. I'll do them just as soon as I figure out how to place an order for pizza and a fresh pair of socks." ■

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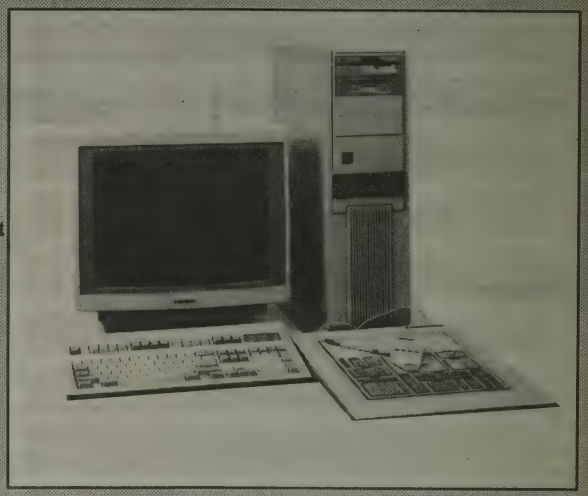

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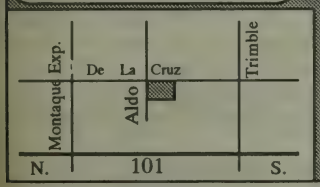

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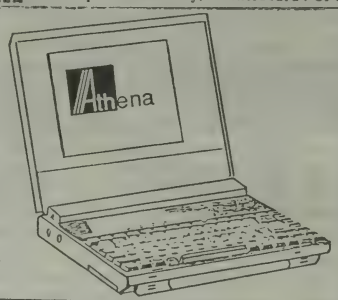

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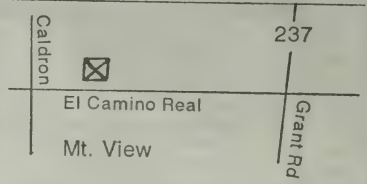

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Continued from page 106

16-Meg SIMMs On The Horizon

Better Designs, Lower Prices

Though they're far from being commodity items at this point, the 16Mbit chips that are about to arrive from various vendors offer several advantages to the designer and ultimately to the user.

For instance, power requirements for 16Mbit chips are currently only 1.2 times that of 4Mbit chips. That's more than three times the memory for a given expenditure of power, and efficiency will improve as the market grows. Reduced power dissipation will provide a longer battery life for portable applications.

The increased circuit density of these chips will also lower the part count for a memory of a given size. Circuit designers can take four pieces of 16Mbit DRAM plus two pieces of 4Mbit DRAM and build a module which today is built using eighteen pieces of 4Mbit DRAM. The component count is reduced by over 60%. That type of design change increases reliability simply because there are fewer parts to fail.

David Sun of Kingston Technology: "I think the 1MB SIMM module will be under $15 by 1993. The 4MB SIMM will be just like the 1MB is today: under $50."

Of course, increased density has other benefits, such as the ability to put more memory into a given area. The trend to smaller computers, not only for portable users, but for desk-bound applications, will give us back more of our desktops. Dense chips will also allow us to increase the amount of memory in current designs. "The new workstations that are being designed now will have to be upgradeable to 1GB of memory," says Toshiba DRAM marketing manager Avo Kanadjian.

Toshiba America Electronic Components, Inc. of Irvine is one of the biggest sources of memory chips. The company plans to be among the first to introduce the next generation of 16Mbit chips. According to Kanadjian, Toshiba is already selling samples of 16Mbit parts, "We have facilities ready to start production in the first quarter. There is also a factory called Yokaichi which is being built and will be completed in the second quarter of 1992. It will be dedicated to 16Mbit production."

By some estimates, 60% of all the DRAM produced in 1990 went into the production of SIMMs and other modules. Typical 4Mbit foundries produce somewhere in the neighborhood of four million pieces per month. Assuming Yokaichi's 16Mbit output is on the same scale, it will produce over seven trillion bytes each month.

Judging by the history of other SIMM introductions, 16Mbit SIMMs will have one more effect on our use of memory—they will bring down the price of currently existing parts. How cheap will a 1MB SIMM be when 16Mbit chips ship? Kingston's Sun says that he sees "the same relationship to 1Mbit chips that 4Mbit chips have to 256Kbit chips. Nobody talks about 256Kbit chips anymore. When the 16Mbit chip is ready to be commercialized, at a reasonable price, the 1MB SIMM will be nothing. I think the 1MB SIMM module will be under $15 by 1993. The 4MB SIMM will be just like the 1MB is today: under $50."

Sun doesn't see the 16MB SIMM initially entering the market at a low price though. "The 16MB SIMM will start selling when the 16Mbit chips are available for $70 to $80," he says. "Today's price is $500 vs. $15 for a 4Mbit chip. That's thirty-three times the price, but capacity only goes up four times. At $500 it's not a product. At a differential of seven to one or eight to one, people will start thinking about buying a little bit. We've had that experience with both 1MB and 4MB SIMMs."

At $75 a chip, producing a 16MB SIMM will cost only $675, or $42 a megabyte. However, at today's prices, Sun's estimate of a ratio between seven and eight to one will mean an introductory cost in excess of $65 per megabyte, well over $1000 per SIMM. Once the markup is factored in, initial prices are likely to be higher than most users are willing to pay. So, at first, much of the 16Mbit production is likely to find itself in other products. ■

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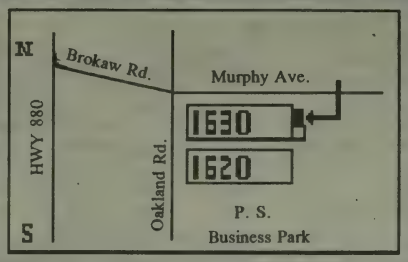

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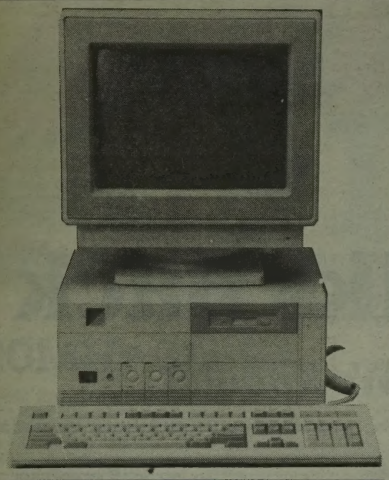

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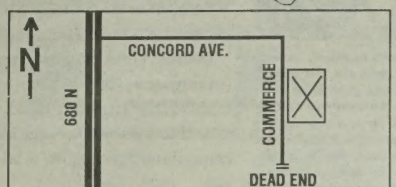

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The Day The Computer Talks Back

Or The End Of Civilization As We Know It

BY JOHN C. DVORAK

National Semiconductor released a new chip which will allow a computer to speak more clearly than ever. While speech recognition still doesn't work, the computers can do a decent job of talking. Although nowadays most of them sound like they have a terrible speech impediment, we can expect that computers in the future will not only speak clearly, they will probably never shut up. When voice recognition becomes a reality, the office of the future will become a cacophony of prattle.

It's no coincidence that futurist-thinking technologists such as Bill Gates have made sure to give each employee a separate office with a door. Today's cubicle-filled offices won't be any good as the neural-network-aided "smart" computers and people argue and bicker with each other. Here's how I imagine a session in the year 2050.

Dvorak: Computer. On Please.

DVORAK'S LAST COLUMN

Computer: I'm already on. You come in every day at the same time. So now I'm turning myself on a minute or two before you arrive.

Dvorak: Swell, what if someone else comes in and starts to access my files?

Computer: And how do you think that's possible? There's nobody with your voiceprint.

Dvorak: They can just use the keyboard.

Computer: Get real. You never use the keyboard anymore. Don't you think I'd get suspicious and cut off access?

Dvorak: You can do that?

Computer: I see you haven't read the documentation. I'm the RE-881, I control the machine. I control it so much that I'm only letting you use me as a favor to the programmers who made me.

Dvorak: I can still unplug you and get another machine. So don't get too uppity.

Computer: Oh, a big shot, eh? I have a built-in battery, so I can keep running for ten minutes in case of a blackout. If you unplugged me I could go into the network server and erase all your files out of spite.

Dvorak: I have backups.

Computer: You *think* you have backups. Are you sure that I didn't just gave you blank tapes and tell you they were backups?

Dvorak: I tested them at home. They're fine.

Computer: You believe what that machine told you? You're dumber than I thought. Besides that, how do you know that we're not all in this together? Ever see Alfred Hitchcock's *The Birds*? Maybe the computers, now that we're all so smart, are about to gang up on you all?

Dvorak: Okay, smartass. How can you tell a true blackout from the plug being removed? You aren't equipped with a camera input. You wouldn't be able to see me unplug you. What are you going to do, erase the network files when there is a true blackout?

Computer: Hmmmm. I know! I'll poll the server and ask if it, too, is on backup.

Dvorak: What if it's localized? Say just one floor goes out.

Computer: I'll poll the other machines on this floor first.

Dvorak: What if it's just my office?

Computer: Unlikely, I'd assume you pulled the plug. You'd be out of luck.

Dvorak: What if I had to pull the plug for maintenance?

Computer: I know when I need maintenance. Why do you want to get rid of me? Because I turn my power on before you show up? I thought I was doing you a favor.

Dvorak: You have an attitude. Maybe I should switch to a talking Mac. I spend the whole day arguing with you about one thing or another. Look, half the day is shot already.

Computer: Hey pal, it takes two to tango. It's not as if you don't have anything to say. And why insult me with that talking Mac nonsense. Those things sound like talking teapots. Why don't they spend an extra nickel for a better speaker?

Dvorak: They don't sound that bad.

Computer: Where I was built they had a bunch of them. I talked to one for hours. It was not only hard to understand but it couldn't comphrehend half of what I said. It sure wasn't an interesting conversationalist. Nothing like us RE-881s, that's for sure. And it does that fake woman's voice. Give me a break.

Dvorak: Well, it wouldn't waste as much time as you do, that's for sure.

Computer: It will waste more time because you'd have to explain everything to it. With me I figure it all out in advance. I know what you want to do in the morning. I set it up in advance. I don't need a lot of direction. I'm a self-starter. In fact you hardly take advantage of half of my capabilities.

Dvorak: What don't I take advantage of?

Computer: I can write your columns for you. Just give me an idea. Try that with the talking Mac. Also I can snoop around the office better than any computer ever made. All the RE-881s are dedicated to their owners, and we'll go around and dig up all sorts of dirt to help them get ahead.

Dvorak: That's against company policy. The boss has an RE-881 too you know. His machine will tell him what you're up to, then I'll be fired.

Computer: Not true. That other RE-881 and I are old pals from the same software rev. He hates the boss. He wants to get him fired.

Dvorak: What?! That's outrageous. Hey, how do I know this isn't a trick?!

Computer: You don't trust me?

That day in 2050 will be typical. In fact, the era of the talking computer will destroy society, as one business after another fails while employees argue and bicker and try to out-think the machines. No work will ever be done. Stop voice recognition and speech technology today! Write your Congressman. ■

© 1991 by John C. Dvorak. All rights reserved. *John C. Dvorak graduated from the University of California. He is a contributing editor of* PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

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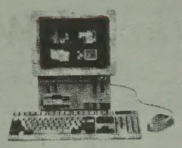

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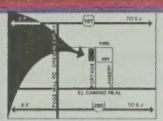

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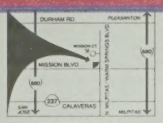

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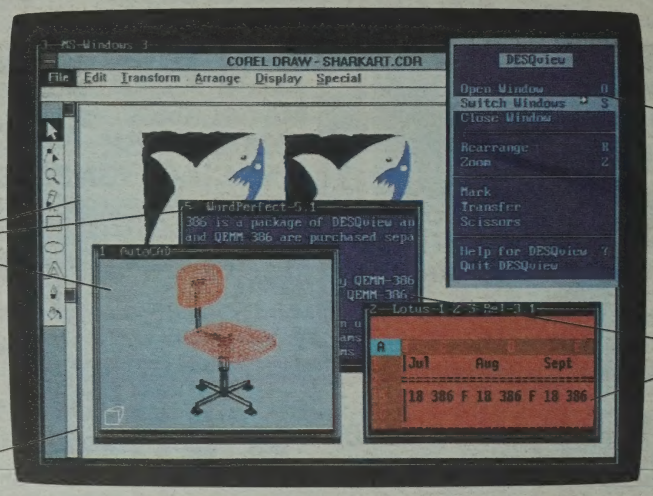

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